REPORT NUMBER: SPNCAP-KAR-16-009

NEW CAR ASSESSMENT PROGRAM (NCAP)

SIDE IMPACT POLE TEST

NISSAN MOTOR CO.

2016 NISSAN VERSA S 4-DOOR SEDAN

NHTSA No: M20165204

PREPARED BY:

KARCO ENGINEERING, LLC.

9270 HOLLY ROAD

ADELANTO, CA 92301

DECEMBER 28, 2015

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF CRASHWORTHINESS STANDARDS

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Approval Date: December 28, 2015

FINAL REPORT ACCEPTANCE BY OCWS:

_____

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NHTSA, Office of Crashworthiness Standards

Date: _____

_____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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4. Title and Subtitle	5. Report Date
Final Report of New Car Assessment Program Side Impact Pole Testing of 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204	December 28, 2015
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9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	**10. Work Unit No.** **11. Contract or Grant No.** DTNH22-14-D-00355
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	**13. Type of Report and Period Covered** Final Test Report, December 14 - 28, 2015 **14. Sponsoring Agency Code** NRM-110

15. Supplementary Notes

16. Abstract

A 32.2 km/h (20 mph) 75 deg. oblique impact side PINCAP test was conducted on the subject 2016 Nissan Versa S 4-door sedan in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 14, 2015.

The impact velocity was 32.18 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 5.4 deg. C. The target vehicle's maximum post-test static crush was 436 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})		1000	225.0
Resultant Lower Spine Acceleration	g	82	30
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	3073
Maximum Thoracic Rib Deflection	mm	38	27
Maximum Abdominal Rib Deflection	mm	45	16

The two doors on the struck side of the vehicle were jammed shut and did not separate from the body at the hinges or latches. The opposite doors did not open during the side impact event. The trunk lid opened during the crash.

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs	Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833

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UNCLASSIFIED	UNCLASSIFIED	104	

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SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2016 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-14-D-00355. The purpose of this test is to generate comparative side impact performance in a 2016 Nissan Versa S 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure date October 2015.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2016 Nissan Versa S 4-door sedan. The subject vehicle was towed into the rigid pole at an angle of 74.7° and a velocity of 32.18 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on December 14, 2015. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated October 2015. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) was instrumented accordingly:

Primary and Redundant Head CG tri-axial accelerometers
Thorax upper, middle and lower rib displacement potentiometers
Abdomen upper and lower rib displacement potentiometers
Lower spine (12) tri-axial accelerometers
Iliac load cell
Acetabulum load cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Units	Passenger ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC_{36})		1000	225.0
Lower Spine (T12) Resultant Acceleration	g	82	30
Total Pelvic Force (sum of acetabular and iliac forces	N	5525	3073
Maximum Thoracic Rib Deflection	mm	38*	27
Maximum Abdominal Rib Deflection	mm	45*	16

**Proposed IARV*

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

GENERAL COMMENTS

Both the front and rear doors on the struck side of the vehicle were jammed shut while remaining closed and latched. The roof of the car lifted from the body and separated at the seam with the front driver window and windshield broken. The windshield separated from the vehicle. There was no separation at the hinges or latches. Both doors on the non-struck side remained closed and latched. The trunk opened during impact. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in^2	kPa	6.895
Temperature	General Use	^oF	^oC	=(Tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20165204
Model Year	2016
Make	Nissan
Model	Versa S
Body Style	4-Door Sedan
VIN	3N1CN7AP2GL817036
Body Color	Brilliant Silver
Odometer Reading (km / mi)	101 / 63
Engine Displacement (L)	1.6
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	4
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	No
Power Window Auto-Reverse	No
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

Does Owner's Manual provide instructions to turn off automatic door locks?	N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co.
Date of Manufacture	Aug-15
Vehicle Type	Passenger Car

GVWR (kg)	1528
GAWR Front (kg)	794
GAWR Rear (kg)	775

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	*A*
DSC x 68.04 (kg)				340.2	*B*
Cargo Weight (RCLW) (kg)				44.8	*A-B*

VEHICLE SEAT TYPE

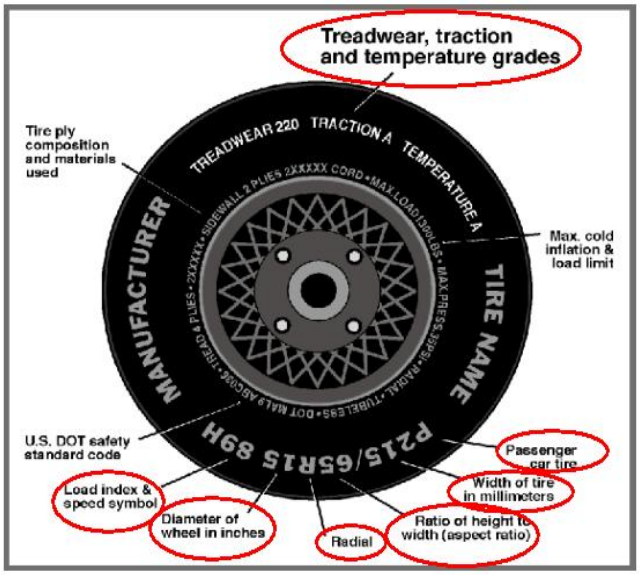
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat		Yes			Yes		
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	P185/65R15	P185/65R15
Tire Size on Vehicle	P185/65R15	P185/65R15
Tire Manufacturer	Continental	Continental
Tire Model	ContiProContact	ContiProContact
Treadware	500	500
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	86H	86H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	P5FP 3YP 3115	P5FP 3YP 3115
DOT Safety Code Right	P5FP 3YP 3115	P5FP 3YP 3115

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	235	235	240	245
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	326.5	225.0		357.0	276.0		342.0	267.0	
Right	kg	315.0	232.0		308.0	245.0		317.0	266.5	
Ratio	%	58.4%	41.6%	100.0%	56.1%	43.9%	100.0%	55.3%	44.7%	100.0%
Total	kg	641.5	457.0	1098.5	665.0	521.0	1186.0	659.0	533.5	1192.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1098.5	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1192.3	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? ☒ **Yes** ☐ **No**

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.3	-0.2	-0.1	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.6	-0.5	-0.4	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.7	-0.6	-0.6	Yes
Rear Bumper-Line Angle (left-to-right)**	°	-0.1	-0.1	0.1	Yes
Vehicle CG (Aft of Front Axle)	mm	1082	1142	1163	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	3	50	16	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)

***The “As Tested” vehicle attitude angle measurements must be within “As Delivered” and the “Fully Loaded” vehicle attitude measurements at each location. Indicate “Yes” or “No” for “Meets Requirement”

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Rear Carpeting	3.5
Spare Tire and Tools	11.0
Non-Struck Side Door Trim and Windows	16.5
Ballast / Equipment Added	51.0

Test Height Adjustable Setting (If Applicable)	

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and front passenger's seat should be set to the forward most, mid-height, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seat should be set to the rear most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	Fixed	509	Max			
			Mid	480	495	509
			Min			
Front Passenger Seat	Fixed	505	Max			
			Mid	475	490	505
			Min			
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

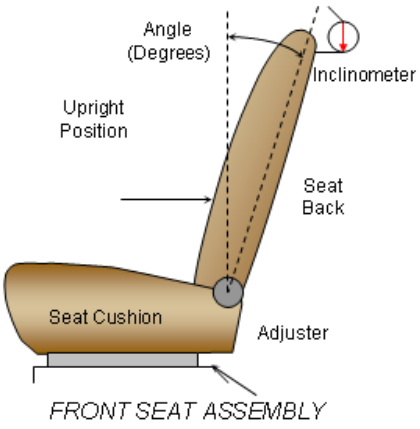
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	0	0
Front Passenger Seat	239	25	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner to the driver's seat. The struck side rear passenger seat back is positioned in accordance with the information provided by the manufacturer in Form 1 for the 5th percentile female dummy in a Side NCAP MDB Test. The rear center and non-struck side rear passenger's seat back is set to match the struck side rear seat back. Seat back angle is measured from.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	61.9	25	1.5	0
Front Passenger Seat	44.8	25	1.6	0
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

*Detent zero (0) is the forward most detent

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1, …, L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	H

HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	Fixed	Fixed

DATA SHEET NO. 2 … (CONTINUED)

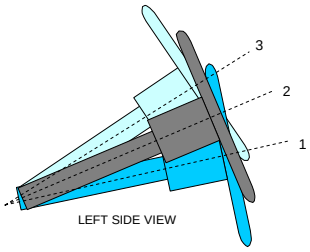
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.

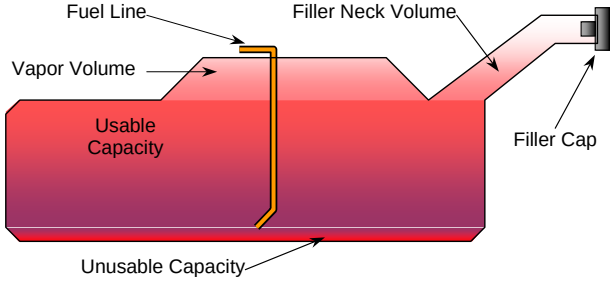


STEERING COLUMN ASSEMBLY

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	25.2	
Geometric Center - Position 2	27.2	
Uppermost - Position 3	29.2	
Telescoping Steering Wheel Travel		
Test Position	27.2	

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel for 1.0 second after the ignition is switched to “ON” and while the engine is running.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	40.88
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	38.02
Actual amount of Solvent Used in Test	38.00
1/3 of Usable Capacity	13.63

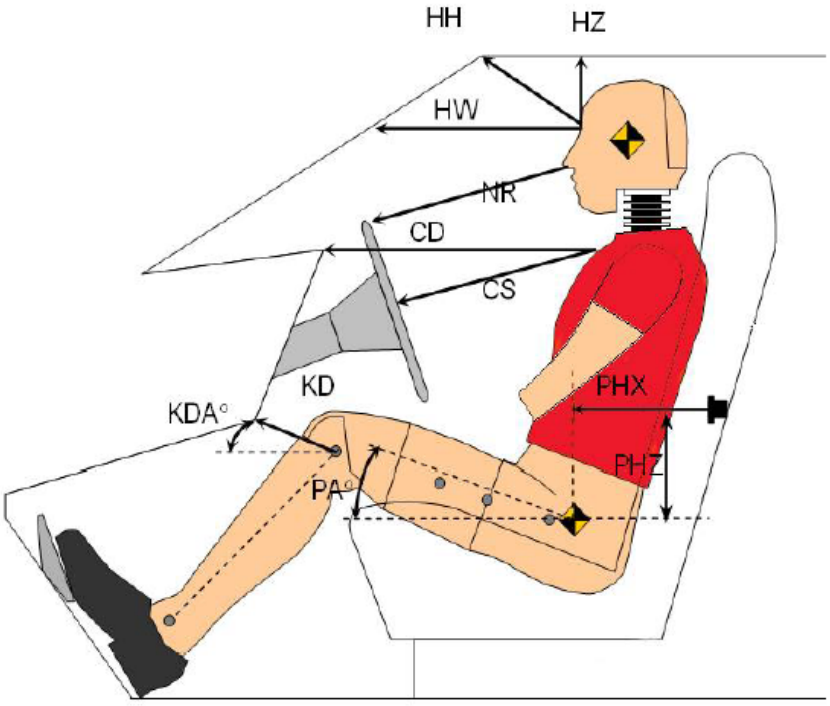
Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



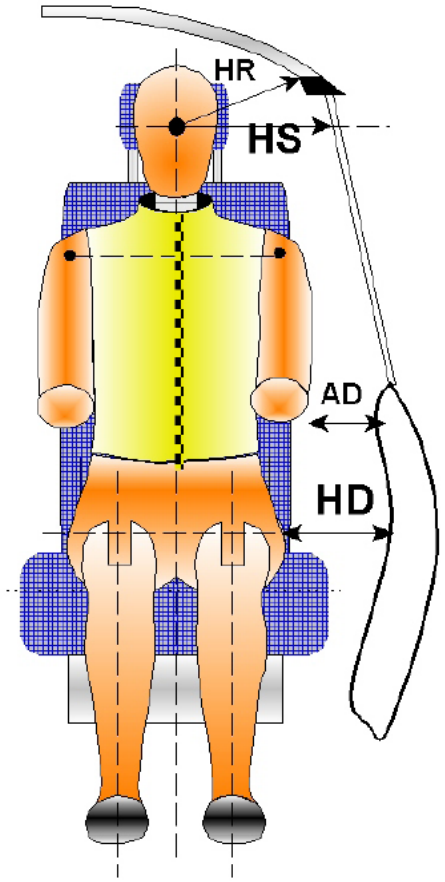
Driver Code	Description	Driver	
		Length (mm)	Angle (º)
HH	Head to Header	263	
HW	Head to Windshield	624	
HZ	Head to Roof	187	
NR	Nose to Rim	260	
CD	Chest to Dash	421	
CS	Chest to Steering Wheel	185	
KD(L)/KDA(L)°	Left Knee to Dash	87	42.0
KD(R)/KDA(R)°	Right Knee to Dash	68	41.5
PAX°	Pelvic Tilt Angle (x-axis)		19.8
PAY°	Pelvic Tilt Angle (y-axis)		0.3
PHX	Hip Point to Striker (x-axis)	386	
PHZ	Hip Point to Striker (z-axis)	81	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



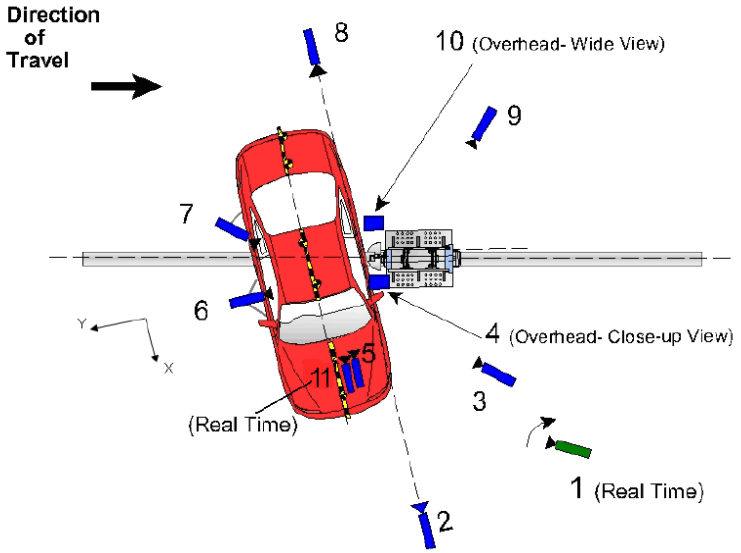
Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	233
HS	Head to Side Window	mm	345
AD	Arm to Door	mm	126
HD	Hip Point to Door	mm	162

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



Reference from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.36	0.51	-1.47	24	1000
6	On-Board - Dummy Side View	0.01	1.56	-1.20	14	1000
7	On-Board - Dummy Rear Oblique View	-1.00	1.60	-1.21	14	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.35	0.51	-1.46		30

*All measurements accurate to ±6 mm

INSTRUMENTATION

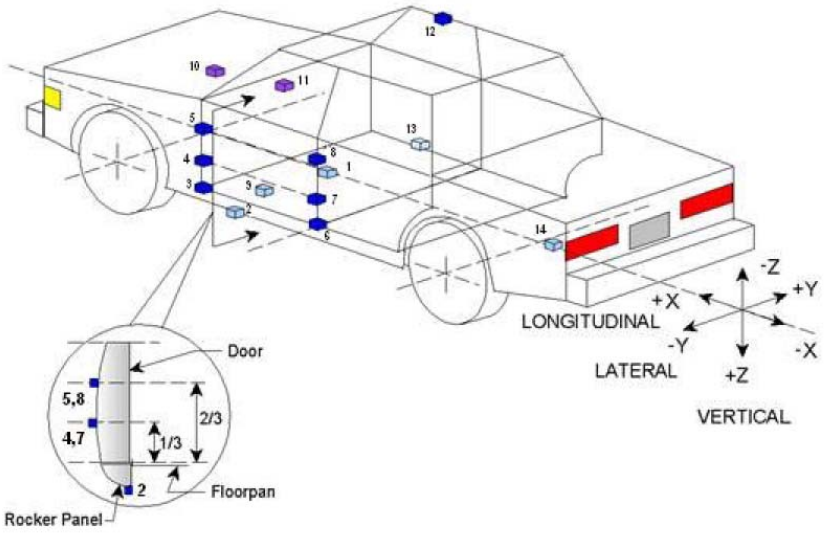
Driver Dummy Channels	16
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	42

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1907	0	-319
2	Left Floor Sill	2718	-677	-200
3	A-Pillar Sill	3189	-746	-392
4	A-Pillar Low	3189	-746	-519
5	A-Pillar Mid	3189	-746	-840
6	B-Pillar Sill	2059	-662	-341
7	B-Pillar Low	2059	-662	-594
8	B-Pillar Mid	2059	-662	-1011
9	Driver Seat Track	2388	-150	-329
10	Engine Top	3721	191	-857
11	Firewall	3476	521	-792
12	Right Roof	2301	448	-1486
13	Right Floor Sill	2083	671	-304
14	Rear Floorpan	1028	435	-468

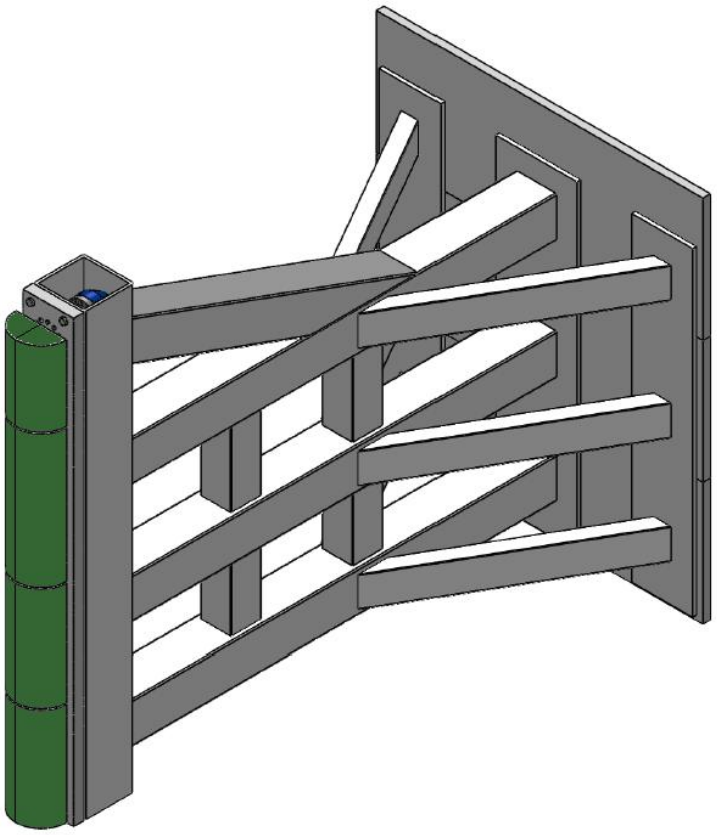
Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7

RIGID POLE LOAD CELL DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 8

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Seat, Torso/Pelvis Airbag
Upper Torso	Seat, Torso/Pelvis Airbag
Lower Torso	Seat, Torso/Pelvis Airbag
Left Hip	Torso/Pelvis Airbag, Seat Pan
Left Knee	None

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	No
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge System Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	Yes
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	N/A	No	N/A
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	Broken
Side Window Damage	Driver front window broken
Other Notable Effects	Roof and windshield partially separated from vehicle

DATA SHEET NO. 8 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

IMPACT POINT LOCATION DATA

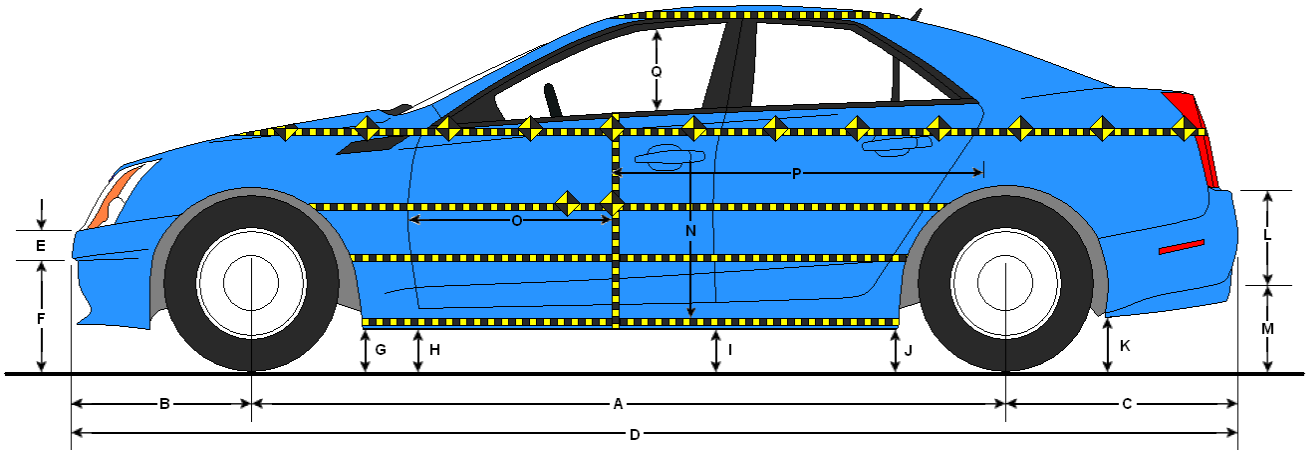
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1025
Actual Impact Point (Aft of Front Axle)	mm		1034
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-9
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.7
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.18
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.15

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

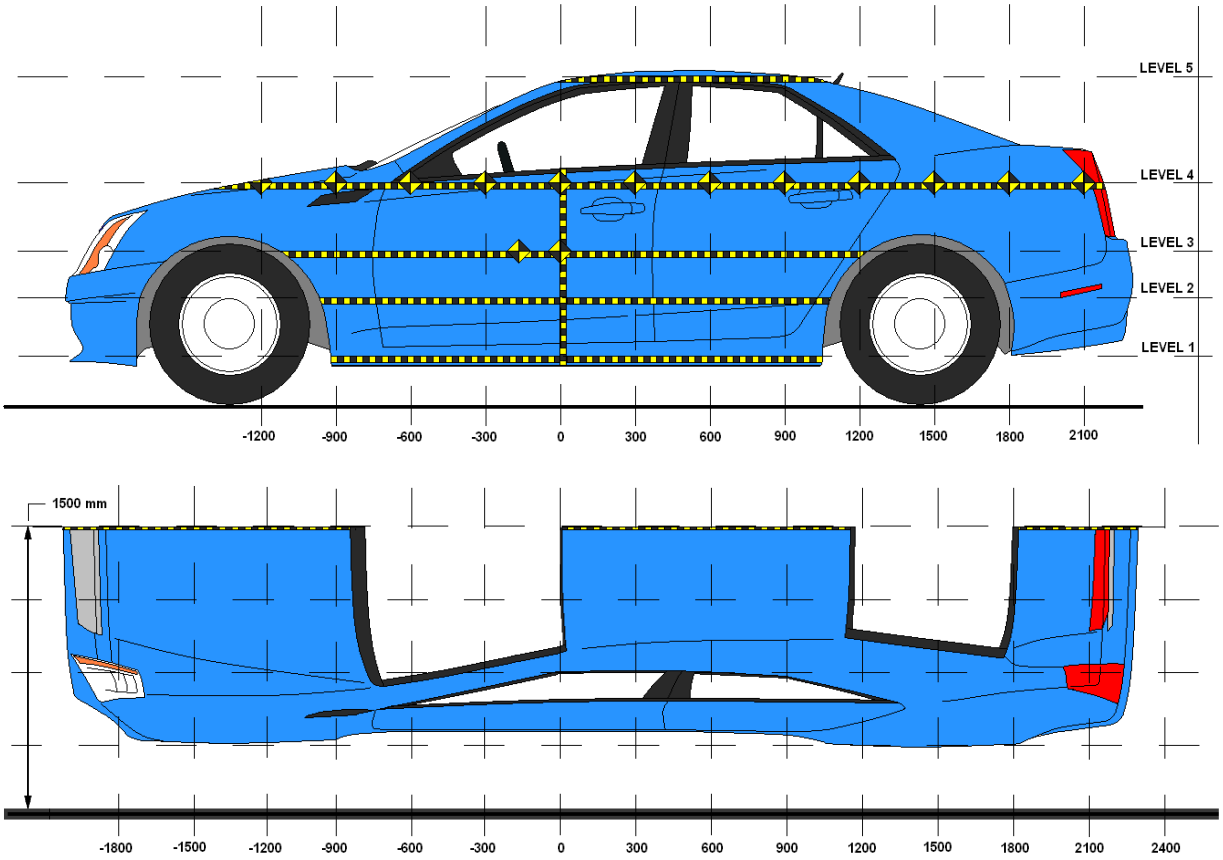
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2600	2527	-73
B	Front Axle to FSOV	875	884	9
C	Rear Axle to RSOV	1029	1046	17
D	Total Length at Centerline	4497	4457	-40
E	Front Bumper Thickness	299	298	-1
F	Fromt Bumper Bottom to Ground	307	321	14
G	Sill Height at Front Wheel Well	273	273	0
H	Sill Height at Front Door Leading Edge	247	247	0
I	Sill Height at B-Pillar	280	296	16
J1	Sill Height at Rear Wheel Well	270	300	30
J2	Pinch Weld Height at Rear Wheel Well	197	224	27
K	Sill Height Aft of Rear Wheel Well	310	346	36
L	Rear Bumper Thickness	192	191	-1
M	Rear Bumper Bottom to Ground	437	469	32
N	Sill Height to Bottom of Front Window Sill	654	651	-3
O	Front Door Leading Edge to Impact CL	609	498	-111
P	Rear Door Trailing Edge to Impact CL	1516	1412	-104
Q	Front Window Opening	449	468	19
R	Right Side Length	2996	3014	18
S	Left Side Length	2996	2887	-109
T	Vehicle Width at B-Pillar	1693	1602	-91

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



NOTE: All measurements in mm with tolerance of ± 3mm

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	320	374	0
2	Occupant H-Point	601	424	0
3	Mid-Door	681	436	0
4	Window Sill	938	373	0
5	Window Top	1459	212	150

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

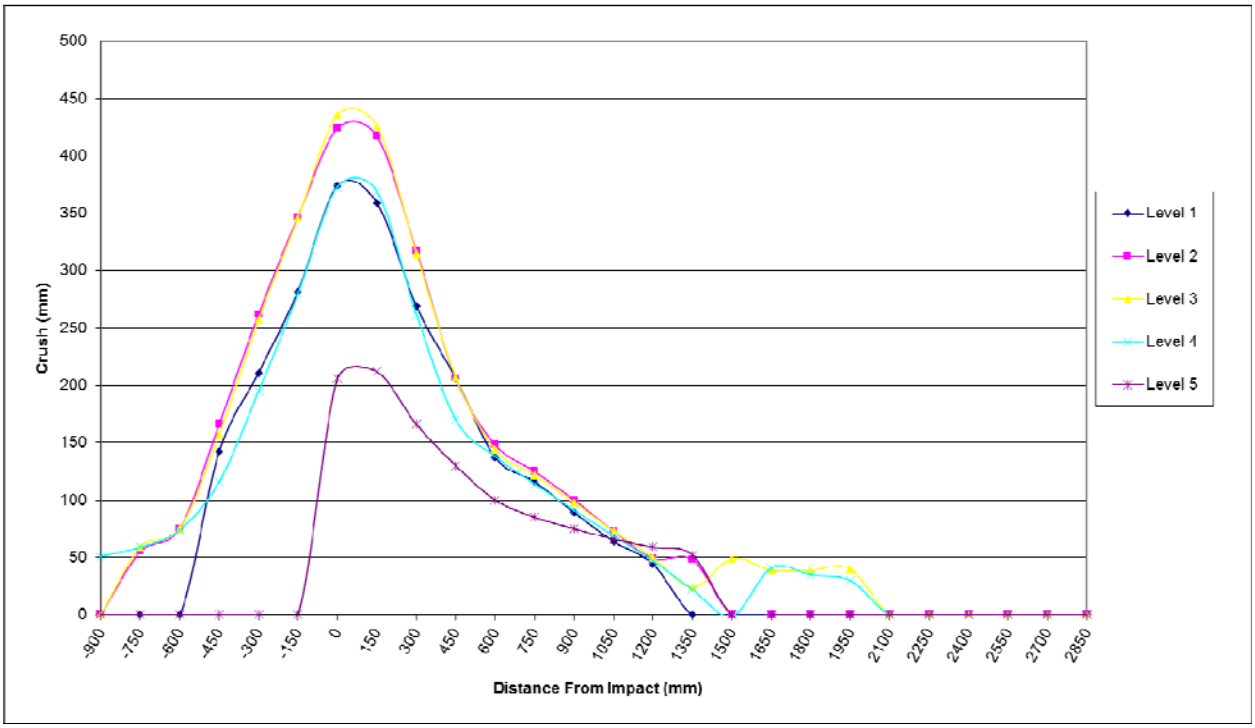
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900				774					825					51	
-750		650	655	757			705	714	816			55	59	59	
-600		657	659	742			732	734	816			75	75	74	
-450	696	658	656	736		838	824	813	852		142	166	157	116	
-300	694	656	653	728		905	918	910	923		211	262	257	195	
-150	692	655	651	723		974	1002	997	1003		282	347	346	280	
0	691	654	650	719	948	1065	1078	1086	1092	1154	374	424	436	373	206
150	691	653	650	716	950	1050	1070	1076	1085	1162	359	417	426	369	212
300	690	654	650	714	954	959	971	965	976	1120	269	317	315	262	166
450	692	654	650	712	957	898	860	857	882	1087	206	206	207	170	130
600	693	656	652	712	957	830	804	796	850	1057	137	148	144	138	100
750	695	657	653	713	957	811	782	775	827	1042	116	125	122	114	85
900	696	658	654	713	958	785	758	752	804	1033	89	100	98	91	75
1050	696	659	655	713	960	760	732	728	782	1026	64	73	73	69	66
1200	684	657	655	711	964	728	706	705	758	1023	44	49	50	47	59
1350		650	653	712	973		698	677	734	1025		48	24	22	52
1500			649	709				698	708				49	-1	
1650			649	711				688	752				39	41	
1800			649	713				688	748				39	35	
1950			654	720				694	750				40	30	
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

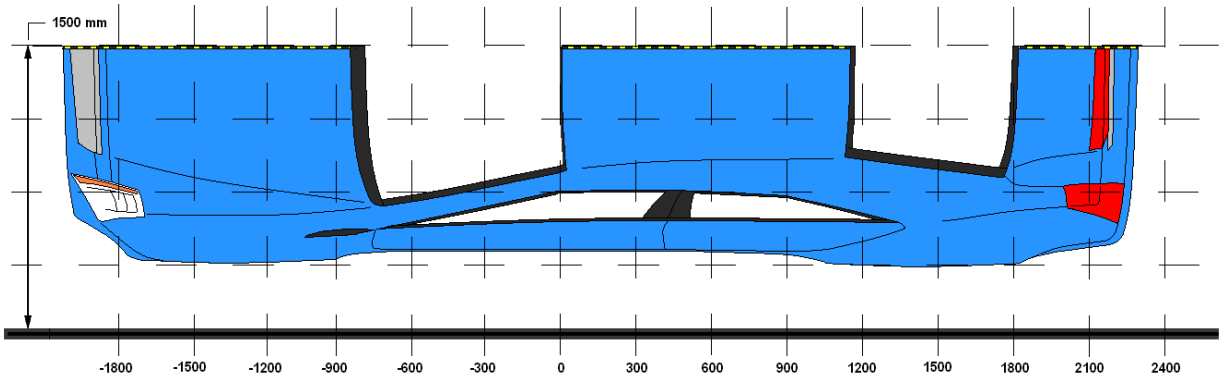


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1950	3	654	694	40
2	1350	5	973	1025	52
3	750	2	657	782	125
4	300	2	654	971	317
5	-300	2	656	918	262
6	-900	4	774	825	51

DATA SHEET NO. 12

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15

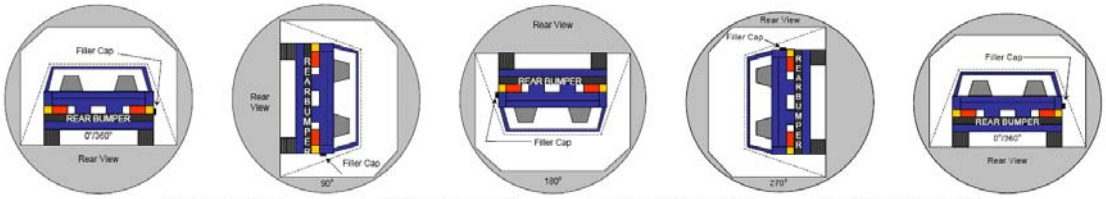
Temperature at Time of Impact: 5.4° C Test Time: 3:20 PM

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: There was no Stoddard solvent spillage.



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	86	300	386
90° To 180°	86	300	386
180° To 270°	85	300	385
270° To 360°	80	300	380

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° To 90°	0			
90° To 180°	0			
180° To 270°	0			
270° To 360°	0			

SOLVENT SPILLAGE LOCATION TABLE

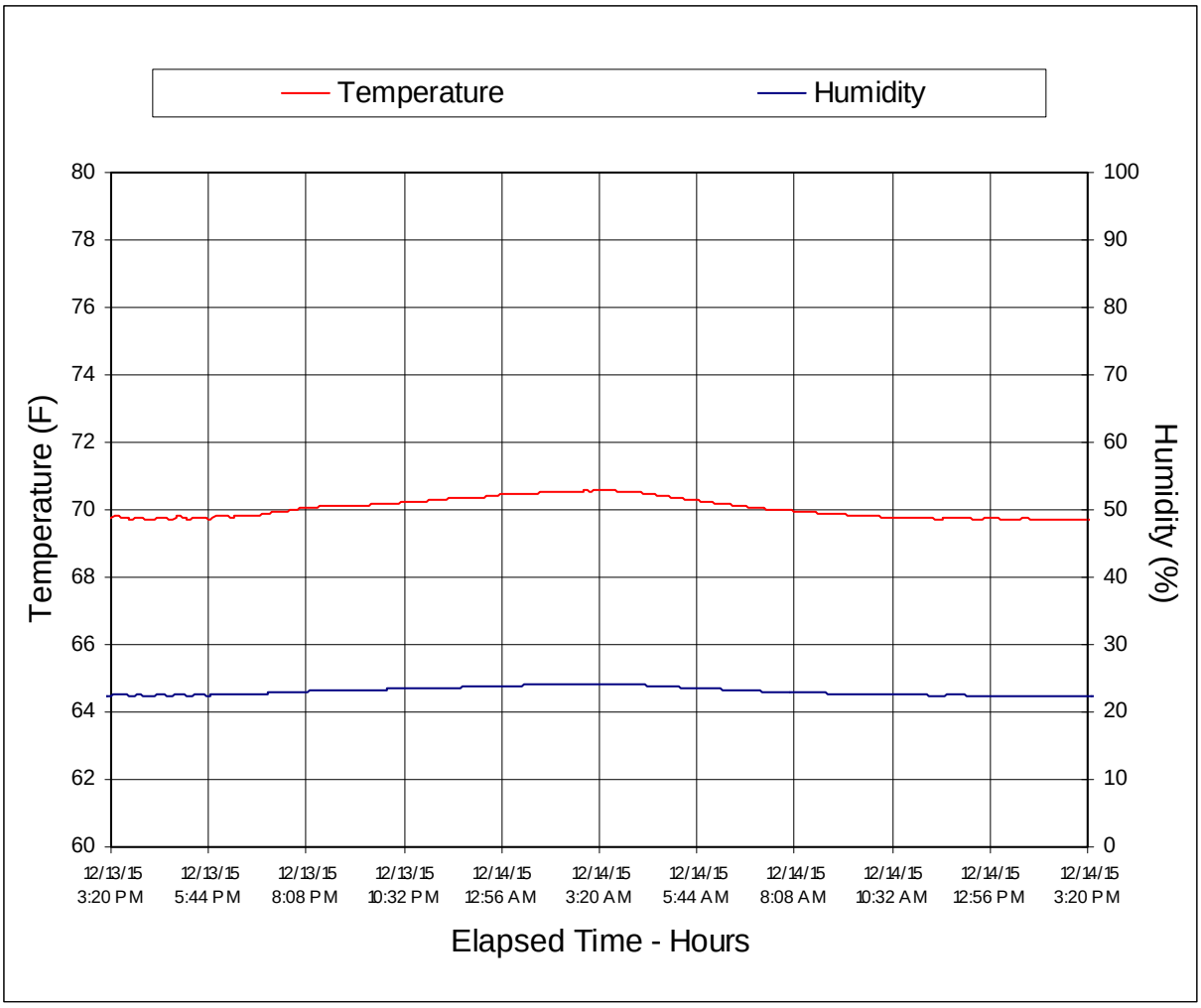
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165204

Test Program: NCAP Side Pole Impact Test Test Date: 12/14/15



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

FIGURE 1. As-Delivered Right Front ¾ View of Test Vehicle

FIGURE 2. As-Delivered Left Rear ¾ View of Test Vehicle

FIGURE 3. Pre-Test Frontal View of Test Vehicle

FIGURE 4. Post-Test Frontal View of Test Vehicle

FIGURE 5. Pre-Test Left Front ¾ View of Test Vehicle

FIGURE 6. Post-Test Left Front ¾ View of Test Vehicle

FIGURE 7. Pre-Test Left Side View of Test Vehicle

FIGURE 8. Post-Test Left Side View of Test Vehicle

FIGURE 9. Pre-Test Left Rear ¾ View of Test Vehicle

FIGURE 10. Post-Test Left Rear ¾ View of Test Vehicle

FIGURE 11. Pre-Test Rear View of Test Vehicle

FIGURE 12. Post-Test Rear View of Test Vehicle

FIGURE 13. Pre-Test Right Side View of Test Vehicle

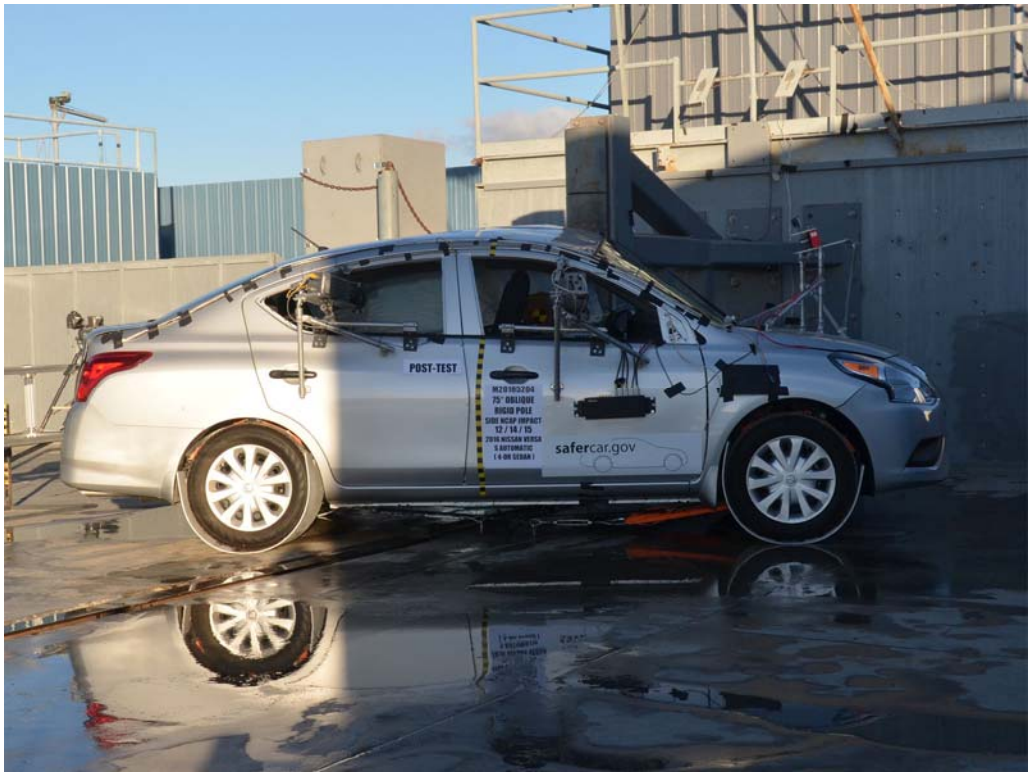


FIGURE 14. Post-Test Right Side View of Test Vehicle

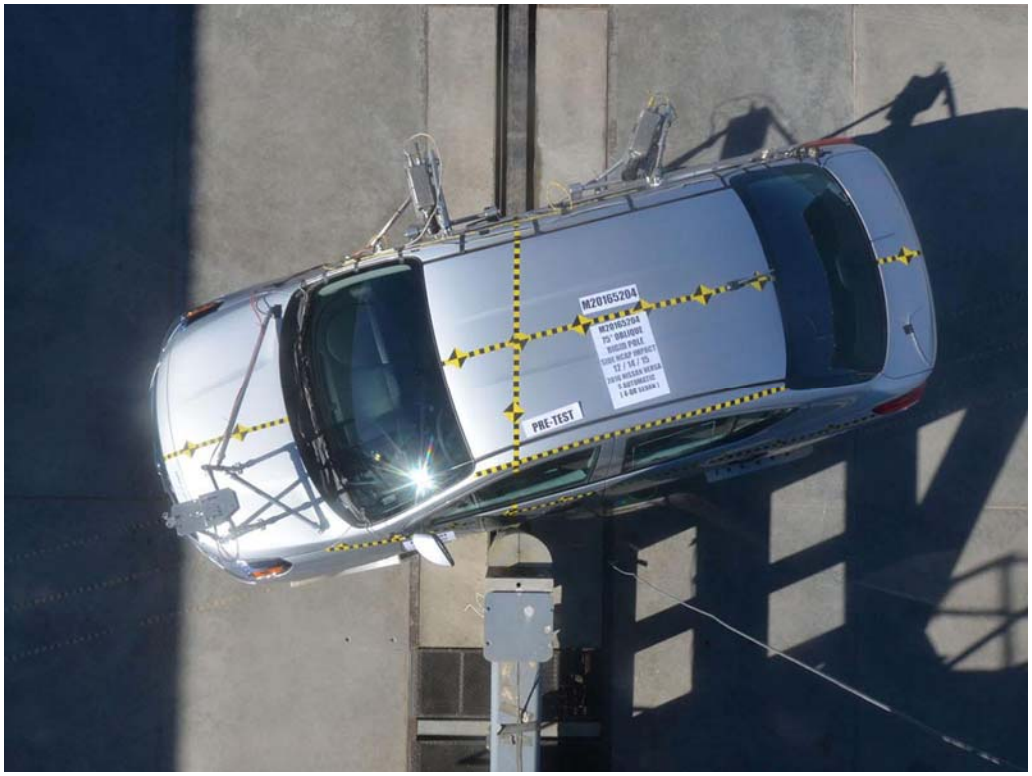


FIGURE 15. Pre-Test Overhead View of Test Area

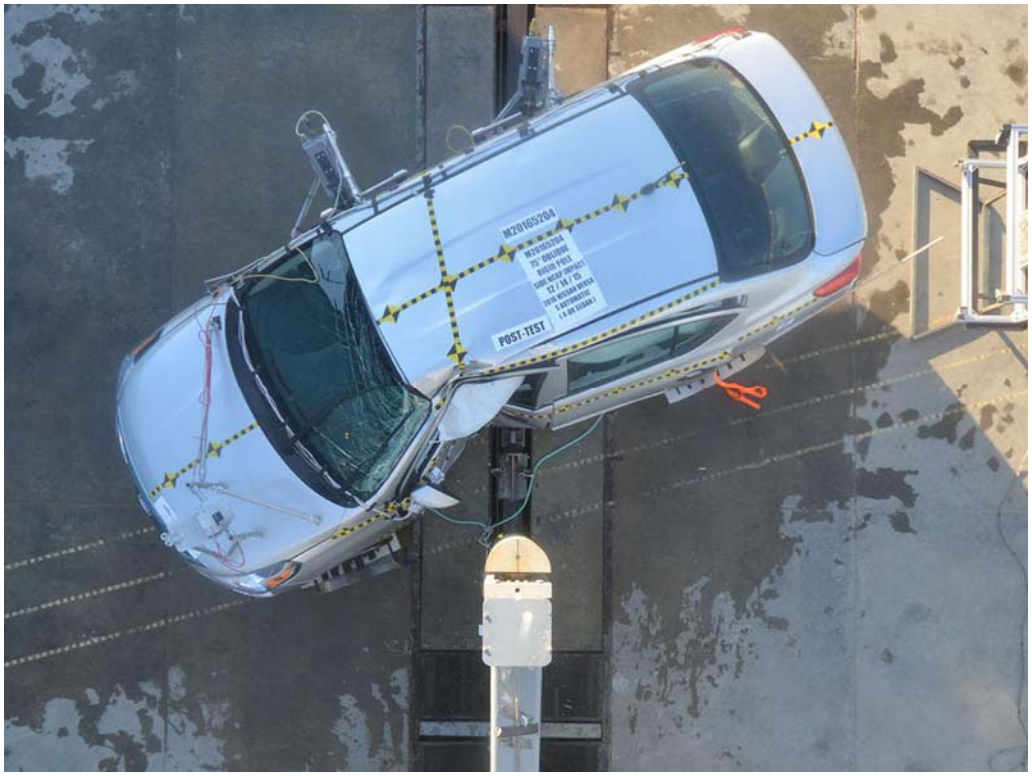


FIGURE 16. Post-Test Overhead View of Test Area

FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Vehicle

FIGURE 18. Pre-Test Right Side View of Pole
Positioned Against Side of Vehicle

FIGURE 19. Pre-Test Close-Up View of Impact Point Target

FIGURE 20. Post-Test Close-Up View of Impact Point Target
Showing Impact Location

FIGURE 21. Pre-Test Front Close-Up View of Dummy Head and Chest

FIGURE 22. Post-Test Front Close-Up View of Dummy

FIGURE 23. Pre-Test Left Side View of Dummy
Showing Belt and Chalking

FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View

FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View


FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning

FIGURE 27. Pre-Test Frontal Close-Up View of
Dummy Head and Shoulders in Relation to Head Restraint

FIGURE 28. Pre-Test Overhead View of Seat Pan Prior to Dummy Positioning

FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan

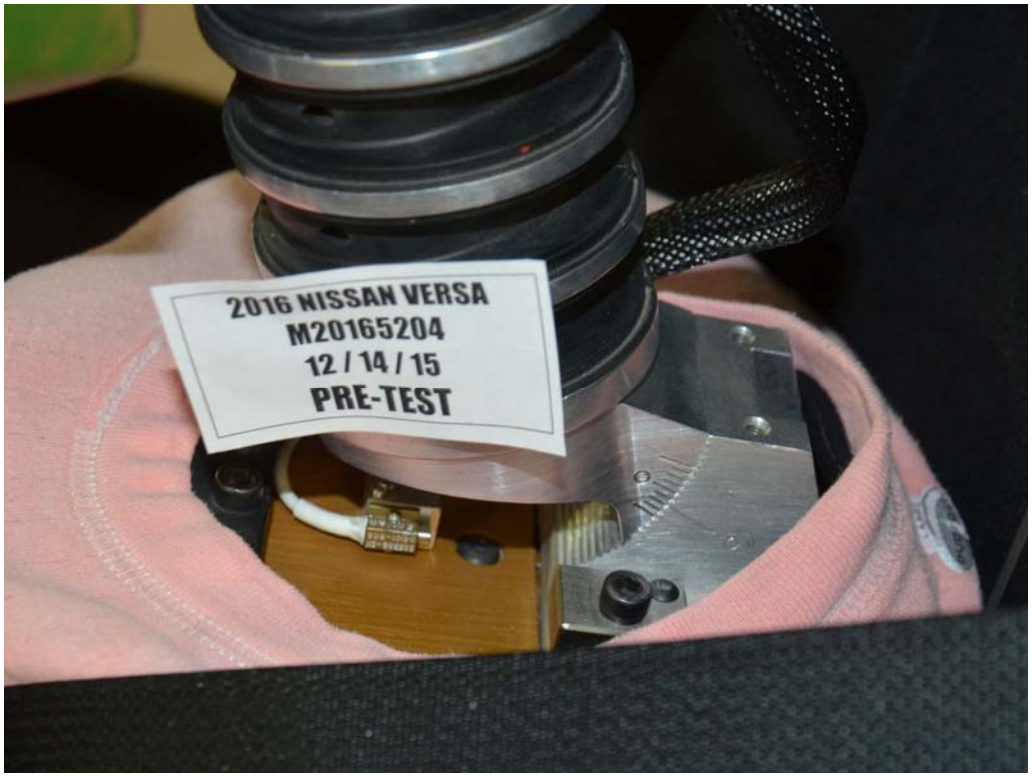


FIGURE 30. Pre-Test Left Side View of Dummy's Neck
Showing Position of Adjustable Neck Bracket

FIGURE 31. Pre-Test Left Side View of Dummy's Head Showing Head is Level

FIGURE 32. Pre-Test Placement of Dummy's Feet

FIGURE 33. Pre-Test View of Belt Anchorage for Dummy

FIGURE 34. Pre-Test Left Side View of Steering Wheel

FIGURE 35. View of Disengaged Parking Brake

FIGURE 36. Pre-Test View of Parking Brake

FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track

FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Back

FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint

FIGURE 40. Pre-Test Dummy and Door Clearance View

FIGURE 41. Post-Test Dummy and Door Clearance View

FIGURE 42. Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment

FIGURE 43. Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment

FIGURE 44. Pre-Test Inner Door Panel View

FIGURE 45. Post-Test Inner Door Panel View
Showing Dummy Contact Locations

FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

FIGURE 47. Post-Test Dummy Close-Up Head Contact With Side Airbag View

FIGURE 48. Post-Test Dummy Close-Up Torso Contact With Vehicle Interior View

FIGURE 49. Post-Test Dummy Close-Up Torso Contact With Side Airbag View

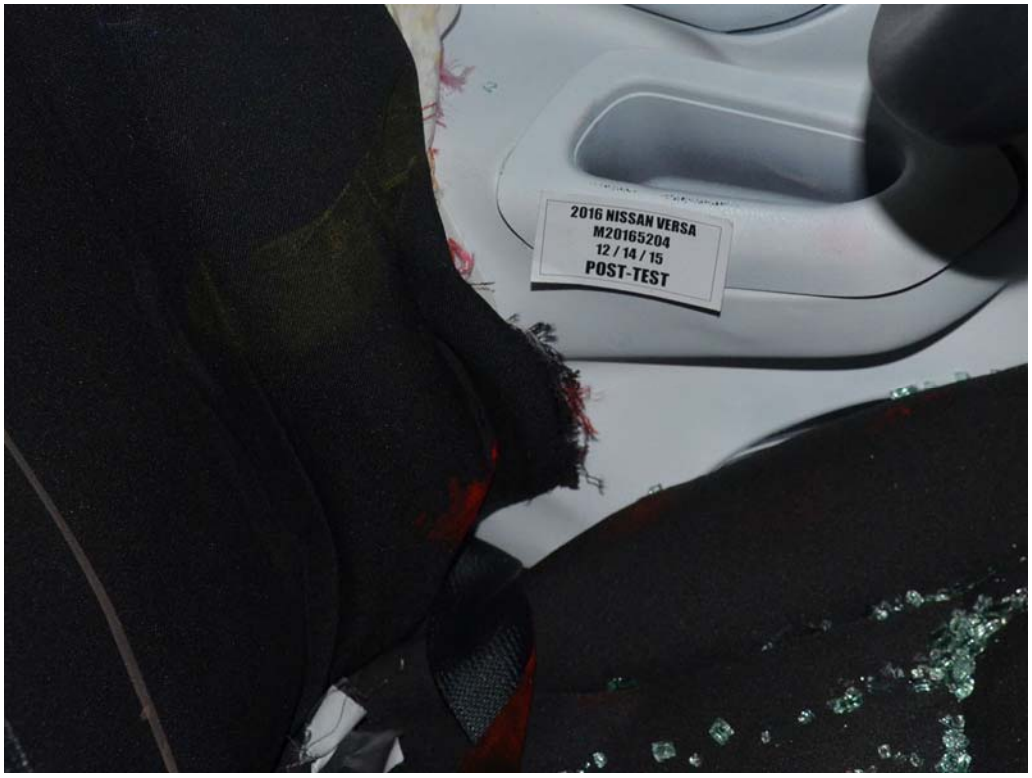


FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact With Vehicle Interior View

FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact With Side Airbag View

Photograph Not Applicable

No Driver Dummy Knee Contact with Vehicle Interior

FIGURE 52. Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck

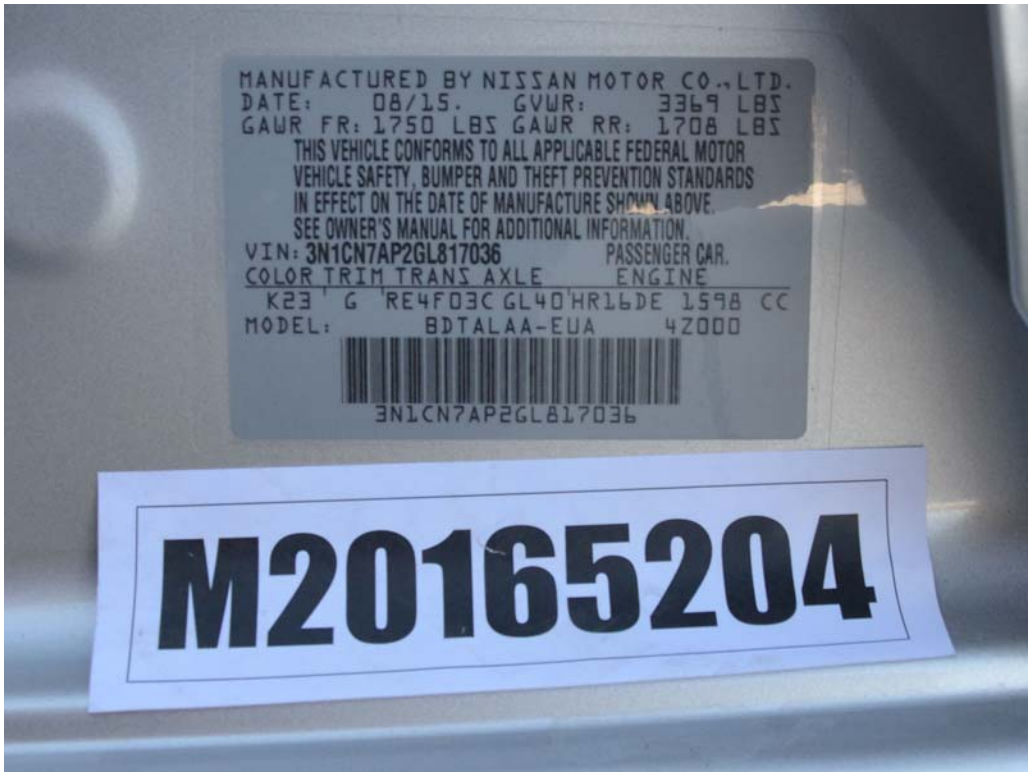


FIGURE 55. Close-Up View of Vehicle's Certification Label

FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label

FIGURE 57. Pre-Test Pole Barrier Front View

FIGURE 58. Post-Test Pole Barrier Front View

FIGURE 59. Pre-Test Pole Barrier Side View

FIGURE 60. Post-Test Pole Barrier Side View

FIGURE 61. Pre-Test Ballast View

FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out

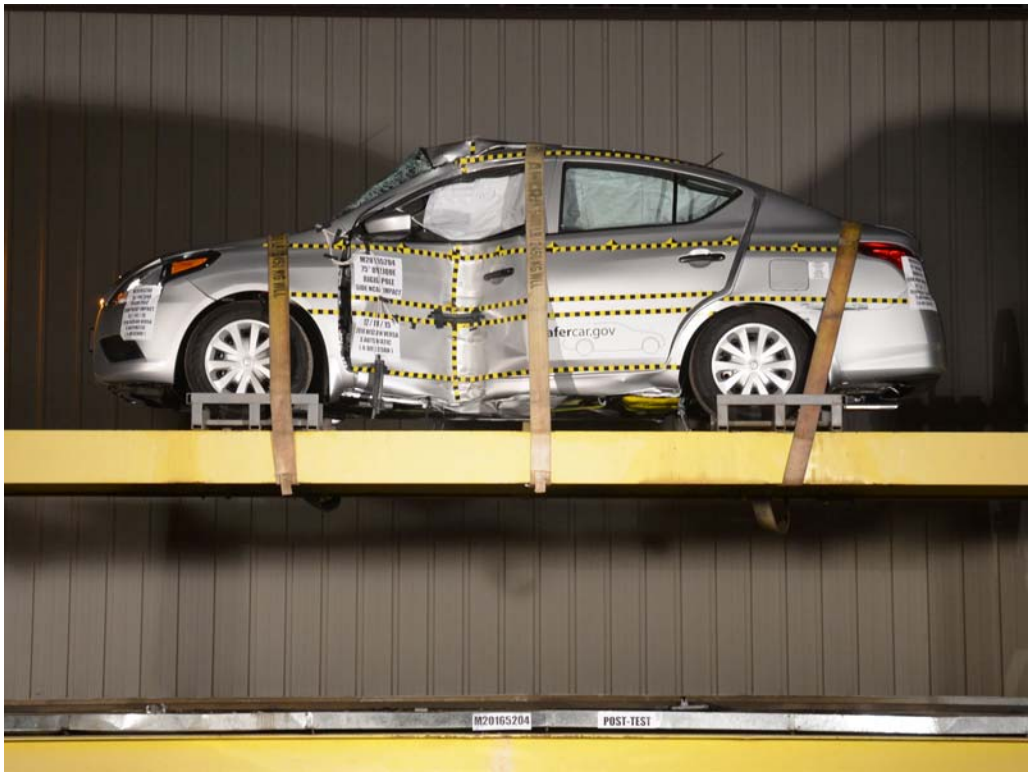


FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees

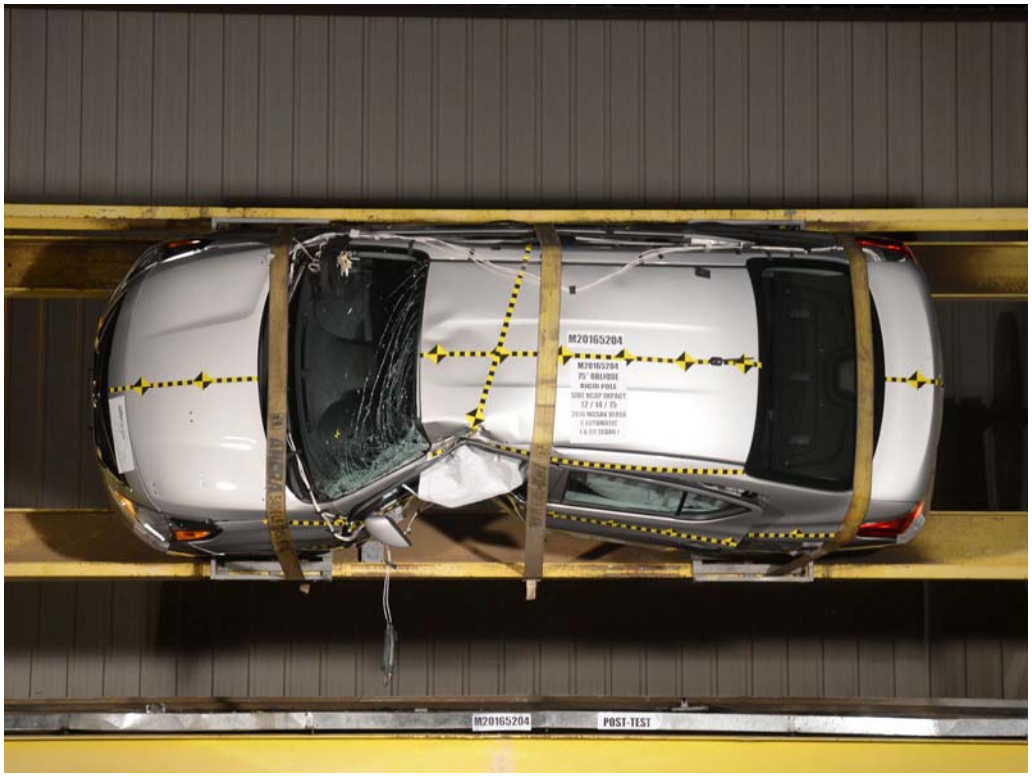


FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees

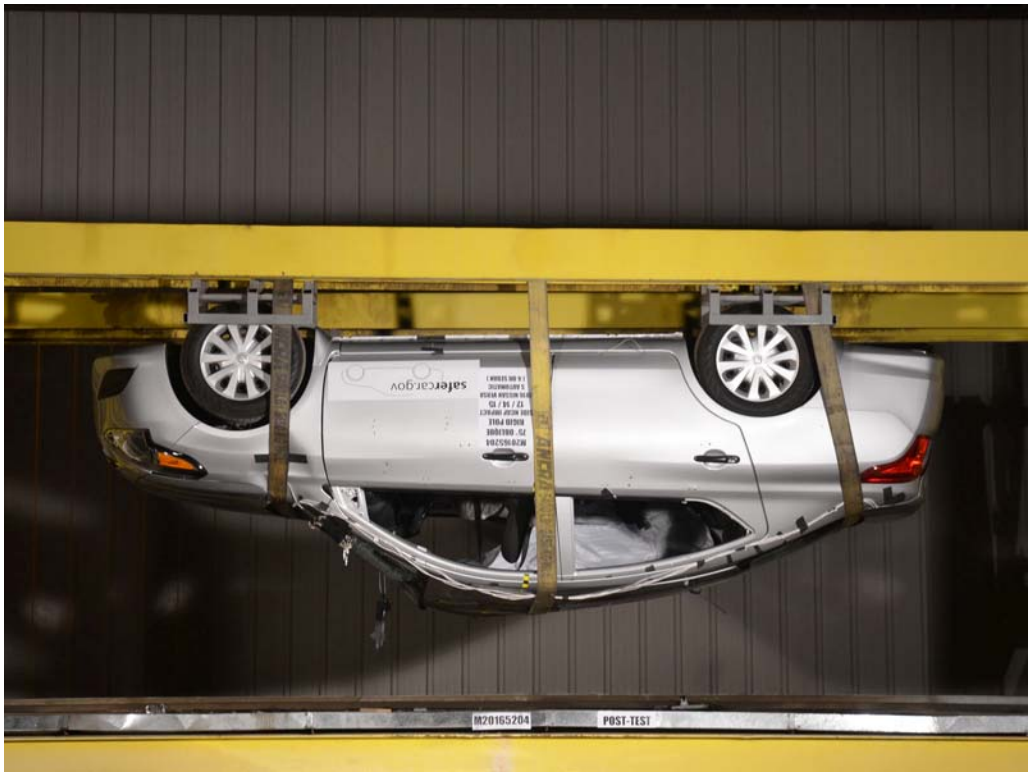


FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees

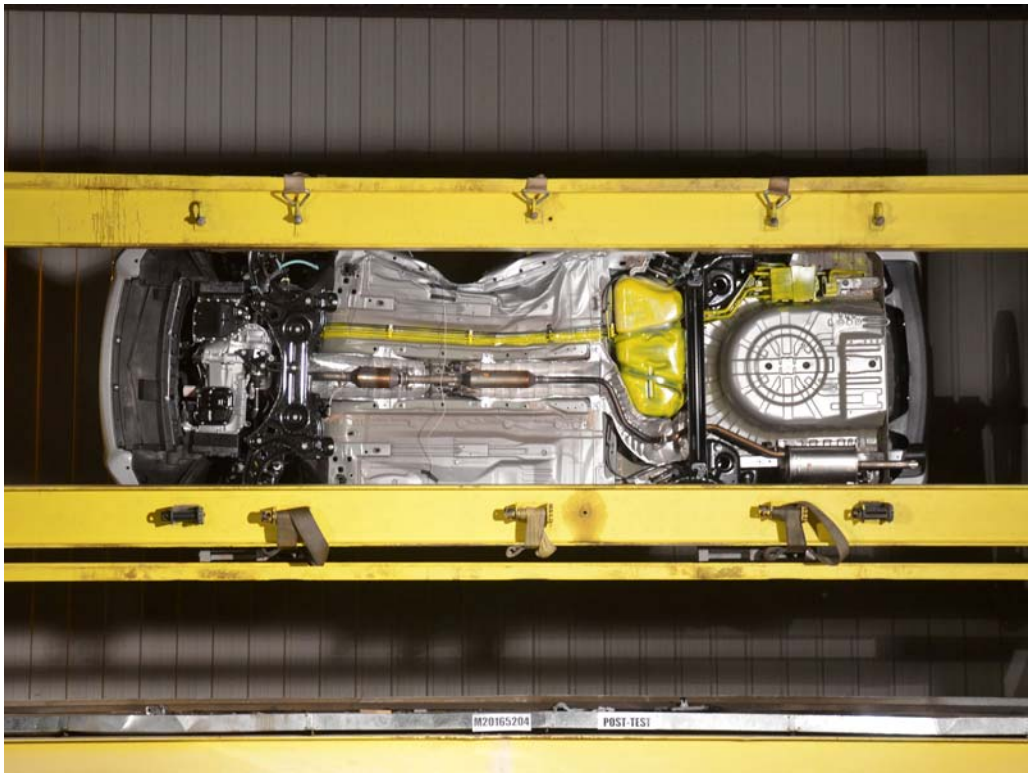


FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees

FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees

FIGURE 68. Impact Event

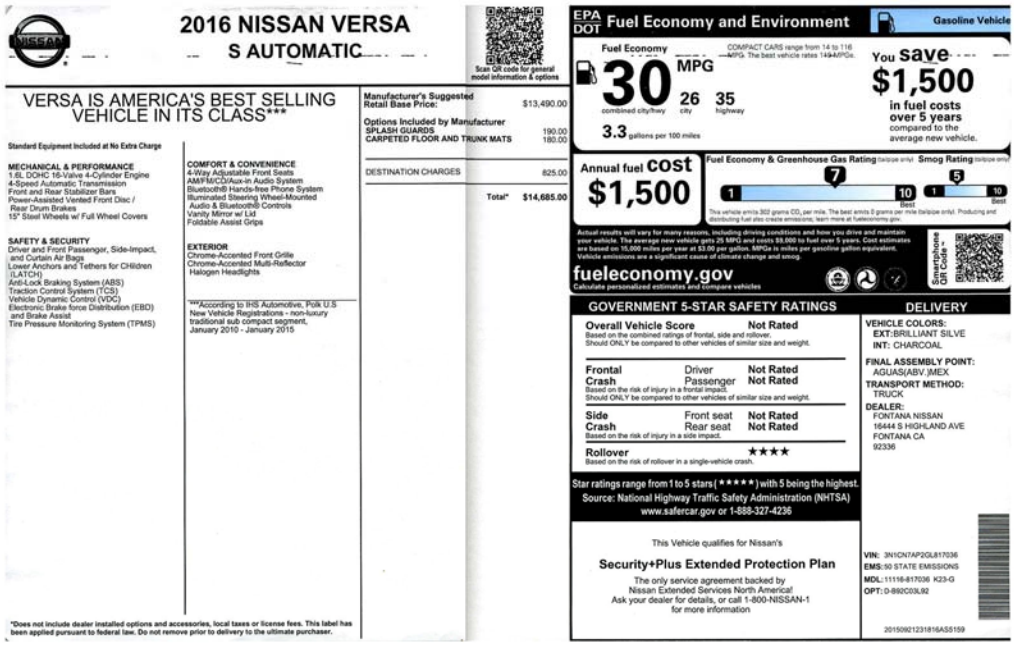


FIGURE 69. Monroney Label

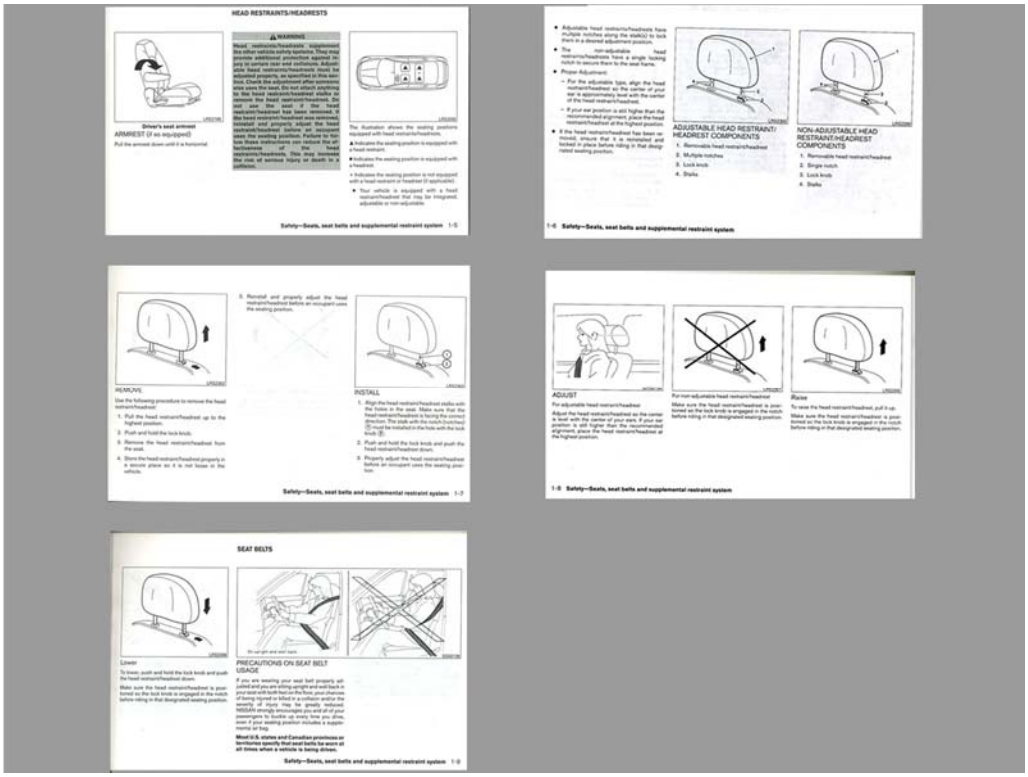


FIGURE 70. Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)

Left B-Pillar Sill Acceleration

Left Lower B-Pillar Acceleration (Y)

Left Mid B-Pillar Acceleration (Y)

Driver Seat Track at Dummy Hip Point Acceleration (Y)

Engine Top Acceleration (X)

Engine Top Acceleration (Y)

Firewall Center Acceleration (Y)

Right Roof at Vertical Impact Reference Line Acceleration (Y)

Right Sill at Vertical Impact Reference Line Acceleration (Y)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)

Load Cell Pole Barrier #2 Force (Y)

Load Cell Pole Barrier #3 Force (Y)

Load Cell Pole Barrier #4 Force (Y)

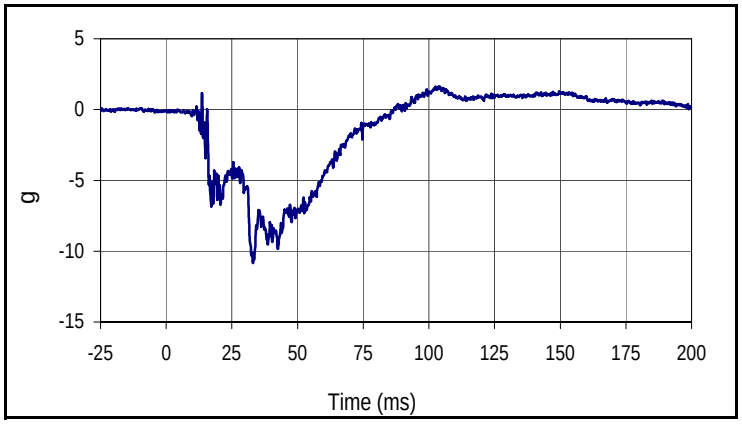
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

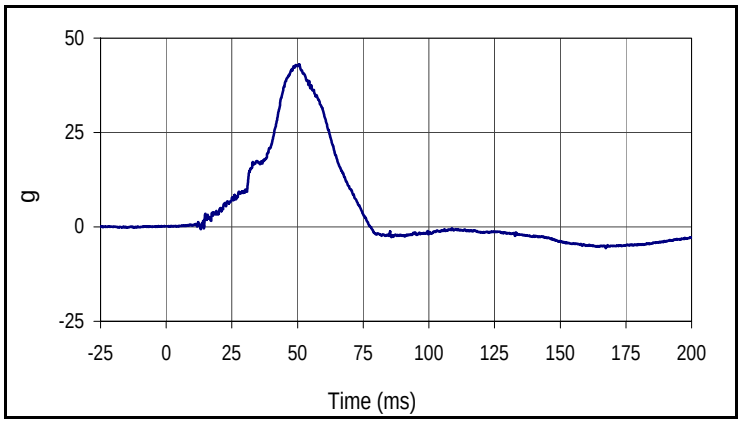
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

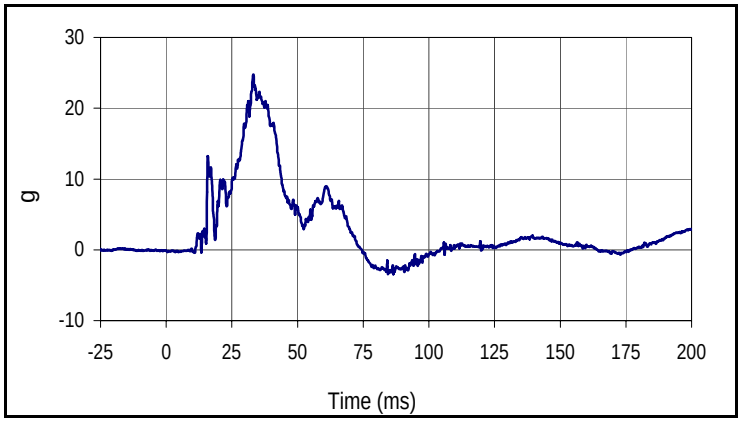
Test Vehicle:	2016 Nissan Versa S 4-Door Sedan	Test Date:	12/14/15
Test Program:	NCAP Side Pole Impact Test	NHTSA No.:	M20165204



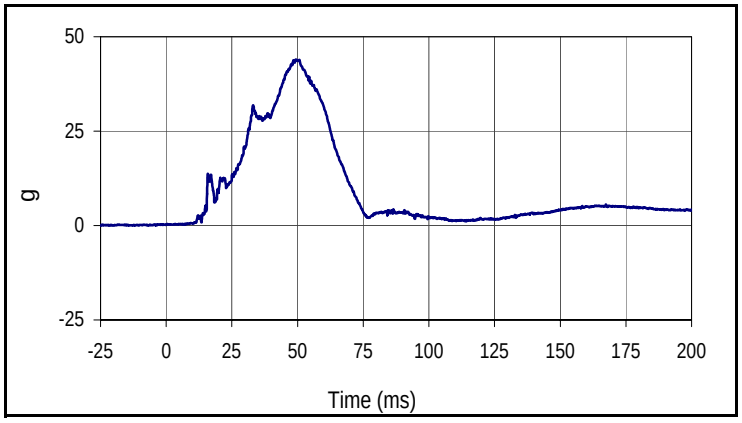
Curve Description			
Driver Head Acceleration X Primary			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
1.6	104.1	-10.8	33.0



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
43.0	50.7	-5.6	167.4

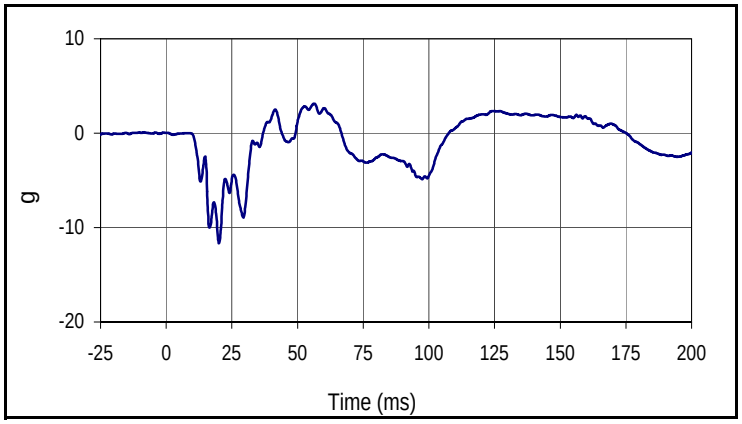


Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
24.7	33.1	-3.5	86.5

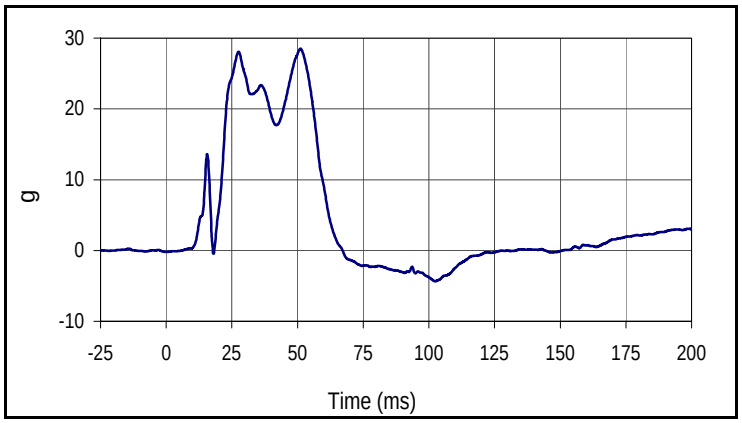


Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
44.0	49.3	0.2	0.1

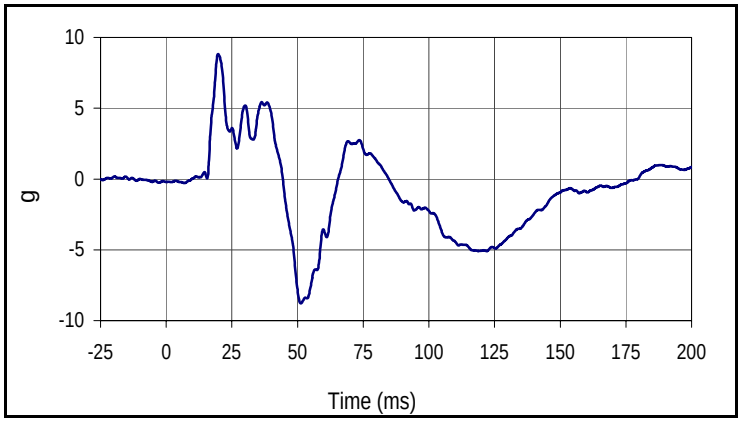
Test Vehicle:	2016 Nissan Versa S 4-Door Sedan	Test Date:	12/14/15
Test Program:	NCAP Side Pole Impact Test	NHTSA No.:	M20165204



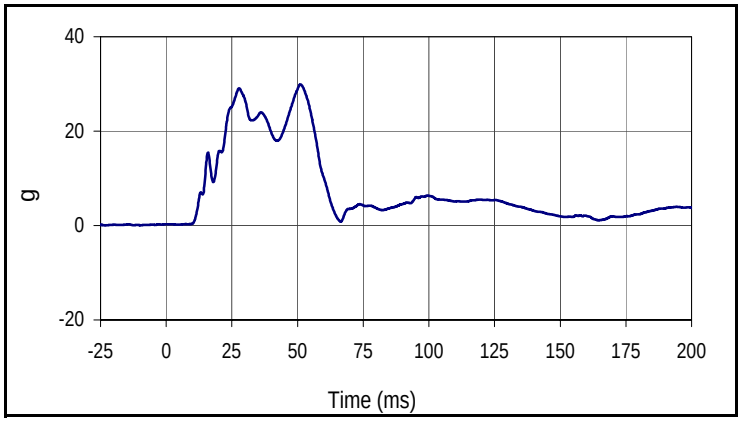
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
005		180	g
Max	Time	Min	Time
3.1	56.4	-11.7	20.1



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
006		180	g
Max	Time	Min	Time
28.5	51.1	-4.3	102.3

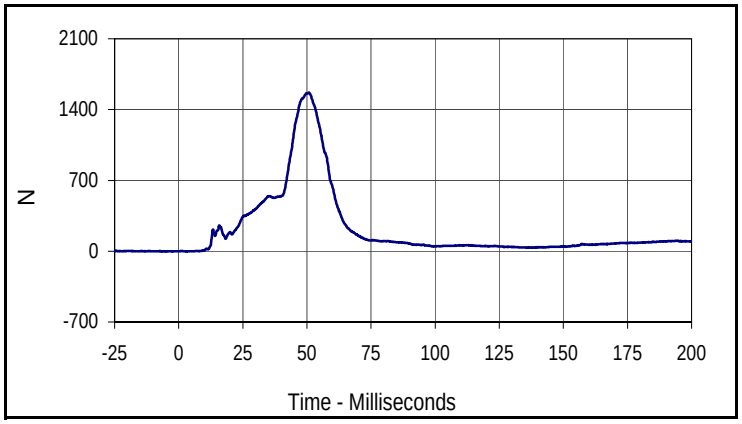


Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
007		180	g
Max	Time	Min	Time
8.8	19.7	-8.8	51.2

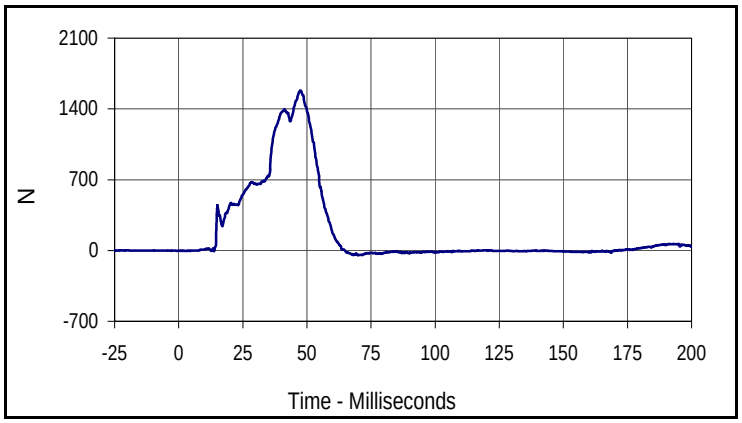


Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.		SAE Class	Units
008		180	g
Max	Time	Min	Time
29.9	51.1	0.2	3.9

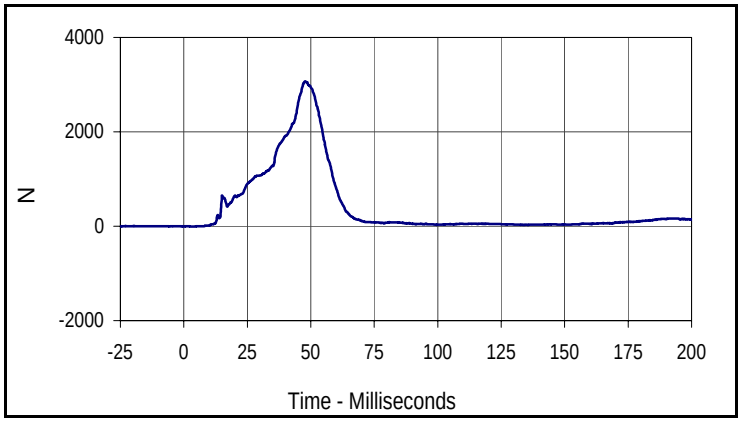
Test Vehicle:	2016 Nissan Versa S 4-Door Sedan	Test Date:	12/14/15
Test Program:	NCAP Side Pole Impact Test	NHTSA No.:	M20165204



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
1567.1	50.7	-3.1	3.0



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
1579.9	47.6	-45.0	68.1



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
3072.9	47.8	-5.6	3.0

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

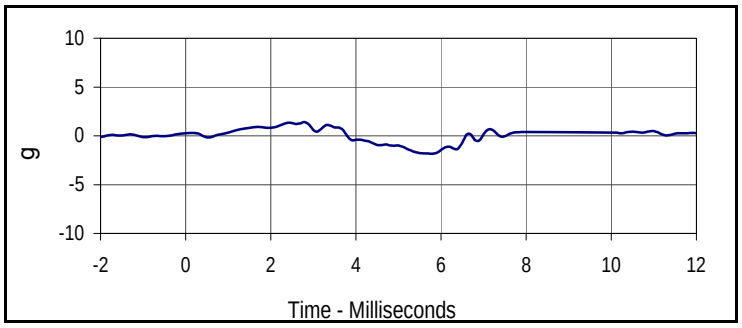
Test Program:	SID IIs External Measurements	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	N/A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
			Overall Test Results		Pass

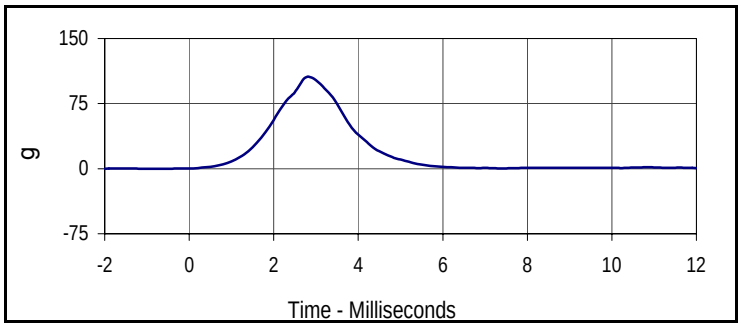
Test Program:	SID IIs Head Drop Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299HD090

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	372	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Peak Head Resultant Acceleration		g	115 to 137	129.3	Pass
Peak Head X Acceleration		g	<15	1.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	0.7	Pass
			Overall Test Results		Pass

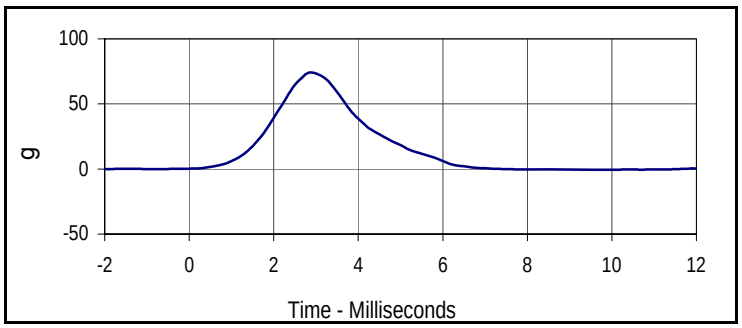
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
129.3	2.8	0.0	-0.7



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.4	2.8	-1.8	5.8



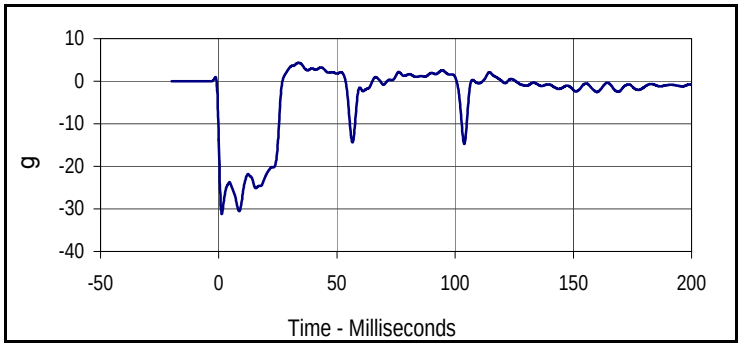
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
106.2	2.8	-0.8	-10.8



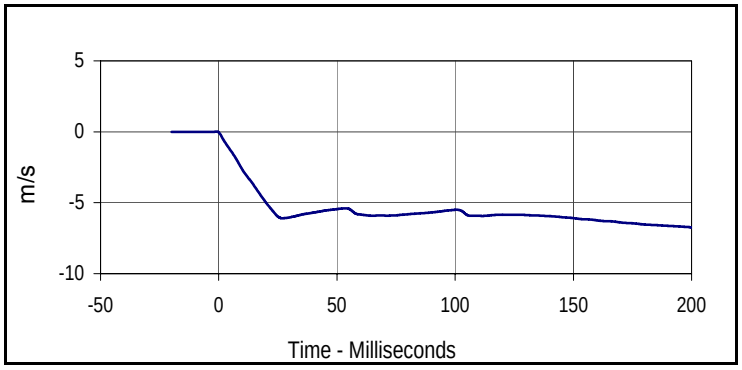
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
74.3	2.9	-0.5	10.1

Test Program:	SID IIs Neck Flexion Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299NB090

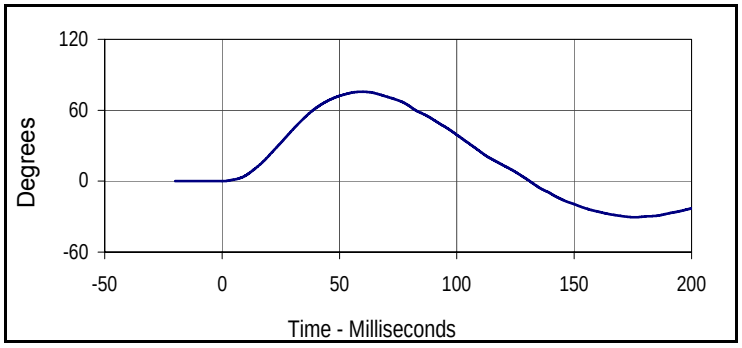
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	417	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.60	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.67	Pass
	15 msec	m/s	-3.30 to -4.10	-3.81	Pass
	20 msec	m/s	-4.40 to -5.40	-5.00	Pass
	25 msec	m/s	-5.40 to -6.10	-5.98	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.09	Pass
D-Plane Rotation	Max	Degrees	71 to 81	75.5	Pass
	Time	msec	50 to 70	60.4	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-40.5	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	105.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.3	0.0	-31.2	0.0

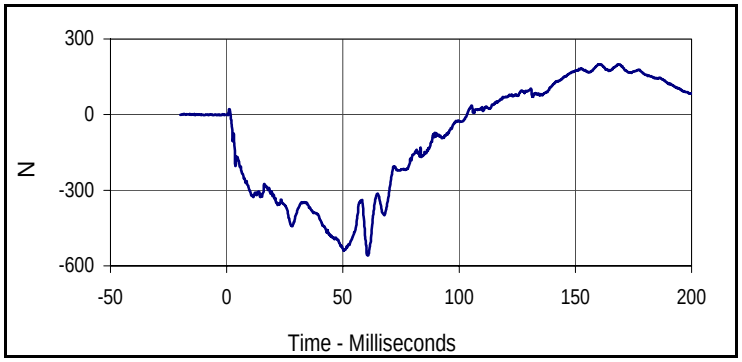


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.7	199.9

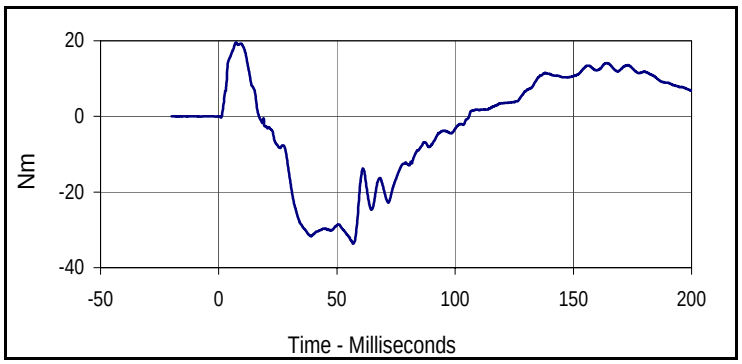


Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.5	60.4	-30.5	175.7

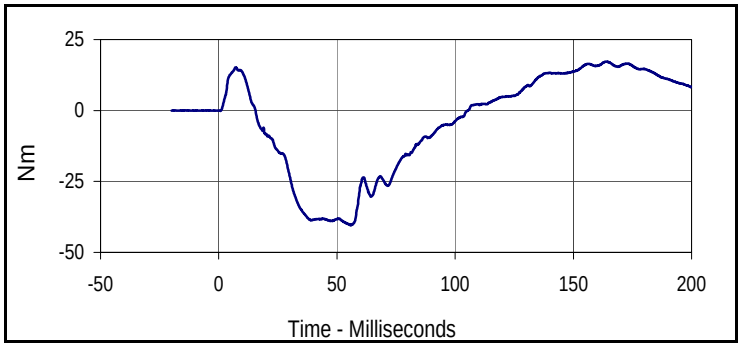
Test Program:	SID IIs Neck Flexion Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299NB090



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
200.2	168.3	-558.4	60.8



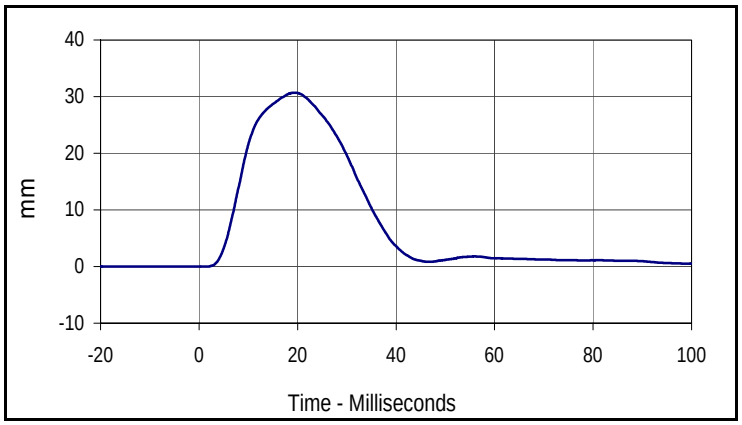
Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
19.6	7.3	-33.7	56.8



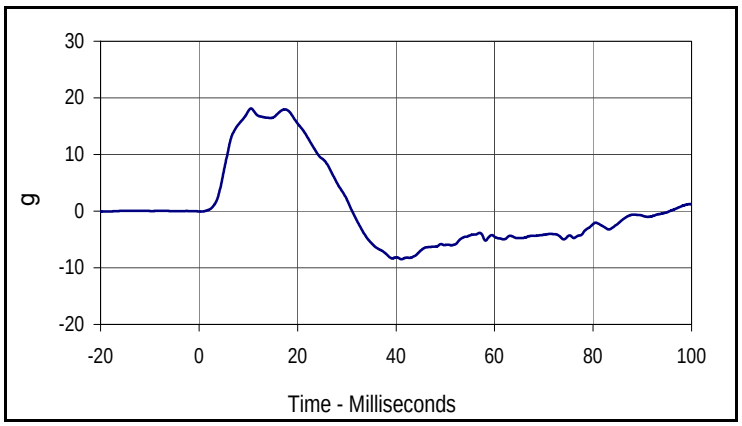
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
17.3	163.8	-40.5	55.8

Test Program:	SID IIs Shoulder Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299SH090

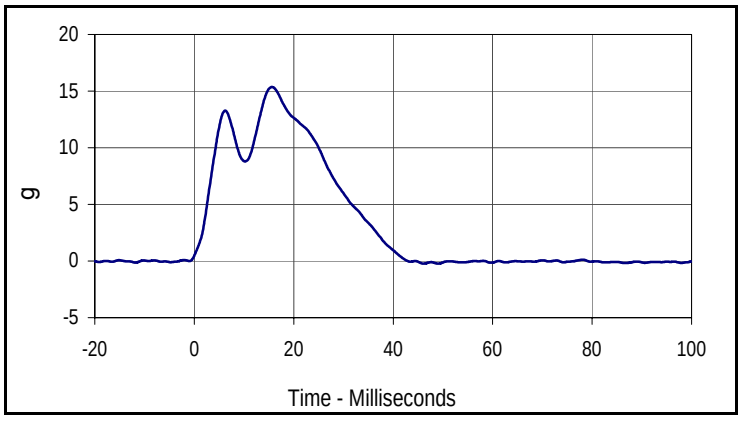
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	462	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection		mm	28 to 37	30.7	Pass
Peak Lateral Spine Acceleratrion Y		g	17 to 22	18.1	Pass
Peak Impactor Acceleration		g	13 to 18	15.4	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.7	19.4	0.0	-16.8



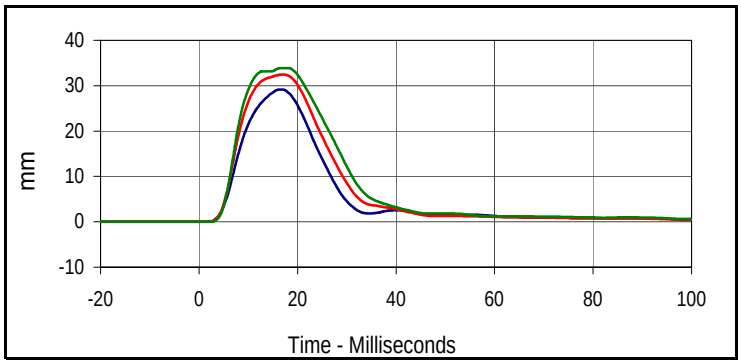
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
18.1	10.5	-8.5	41.1



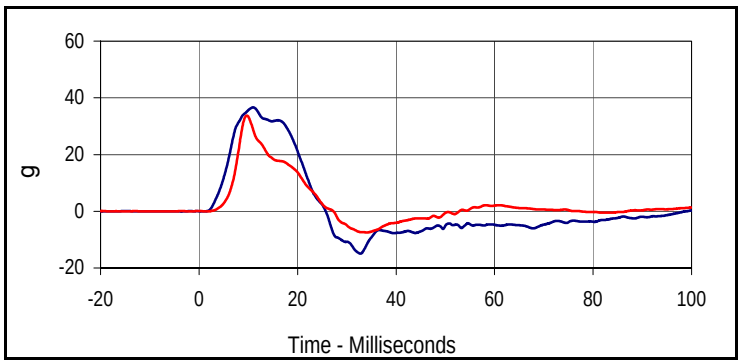
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
15.4	15.6	-0.2	49.0

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299TWA090

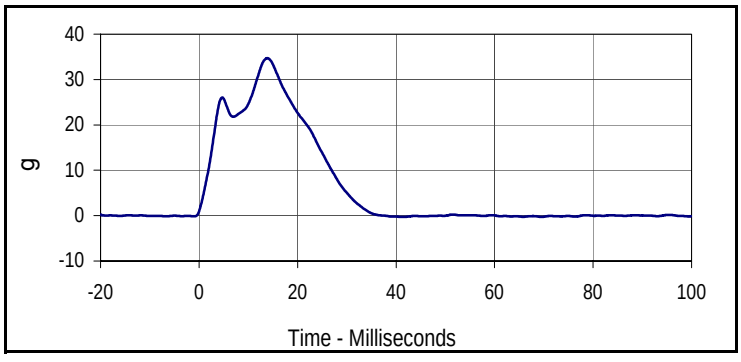
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	507	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.0	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.73	Pass
Peak Shoulder Deflection		mm	31 to 40	37.2	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	29.1	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.4	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	33.9	Pass
Peak Upper Spine Y Acceleration		g	34 to 43	36.7	Pass
Peak Lower Spine Y Acceleration		g	29 to 37	33.8	Pass
Peak Impactor Acceleration		g	30 to 36	34.7	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
29.1	16.6	0.0	-5.2
Middle Thorax Deflection			
Max	Time	Min	Time
32.4	17.0	0.0	-3.1
Lower Thorax Deflection			
Max	Time	Min	Time
33.9	17.1	0.0	-2.4

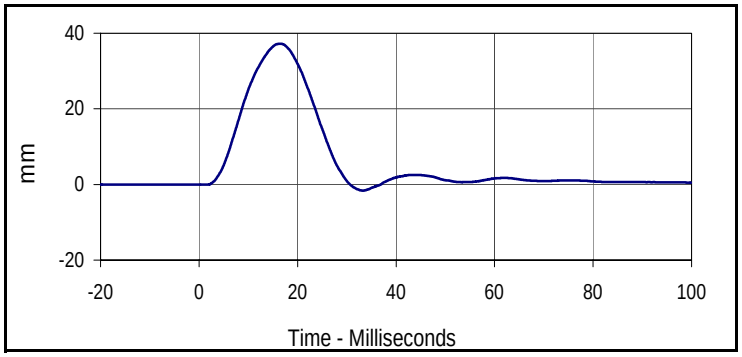


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
36.7	11.0	-14.9	32.8
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
33.8	9.7	-7.5	34.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.7	13.9	-0.3	69.5

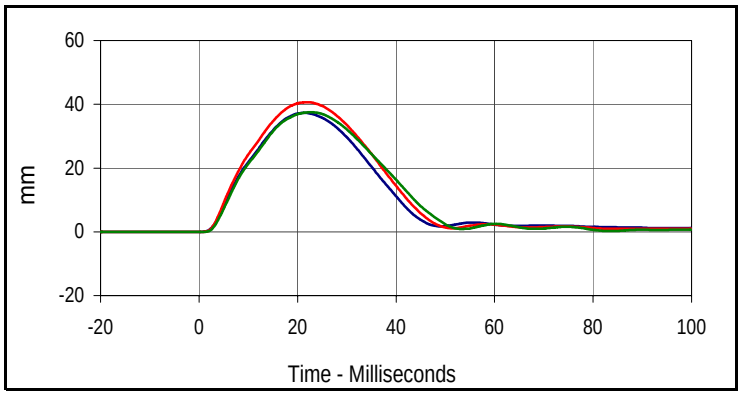
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299TWA090



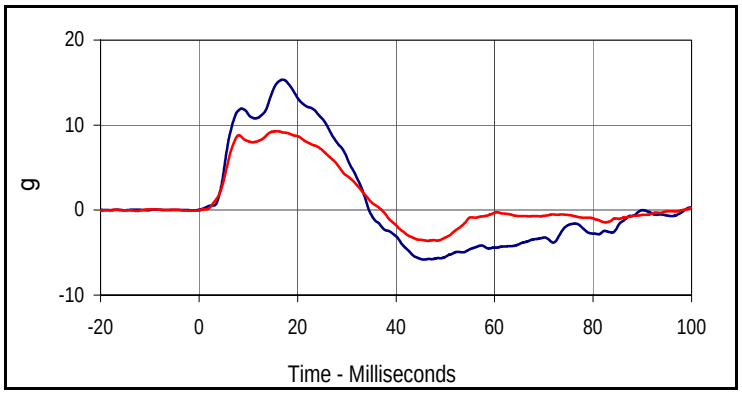
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
37.2	16.4	-1.6	33.3

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299TWOA090

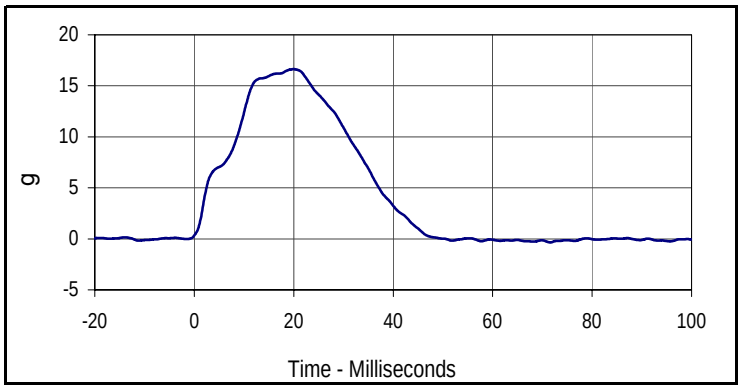
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	552	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.4	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	40.7	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.5	Pass
Peak Upper Spine Y Acceleration		g	13 to 17	15.3	Pass
Peak Lower Spine Y Acceleration		g	7 to 11	9.3	Pass
Peak Impactor Acceleration		g	14 to 18	16.6	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.4	21.5	0.0	-2.6
Middle Thorax Deflection			
Max	Time	Min	Time
40.7	22.1	0.0	-8.8
Lower Thorax Deflection			
Max	Time	Min	Time
37.5	22.7	0.0	0.0



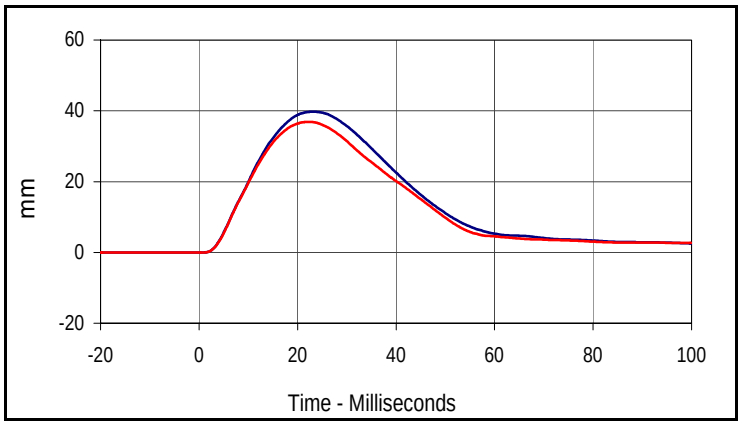
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.3	17.0	-5.8	45.6
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.3	15.7	-3.6	46.5



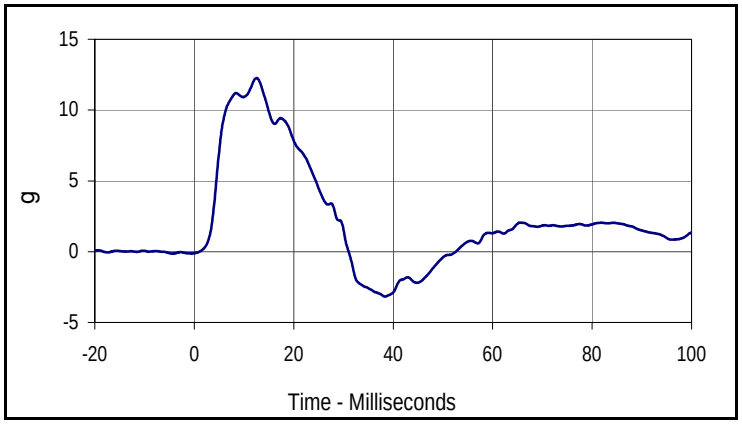
Curve Description			
Impactor Accleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.6	20.0	-0.3	71.6

Test Program:	SID IIs Abdomen Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299ABD090

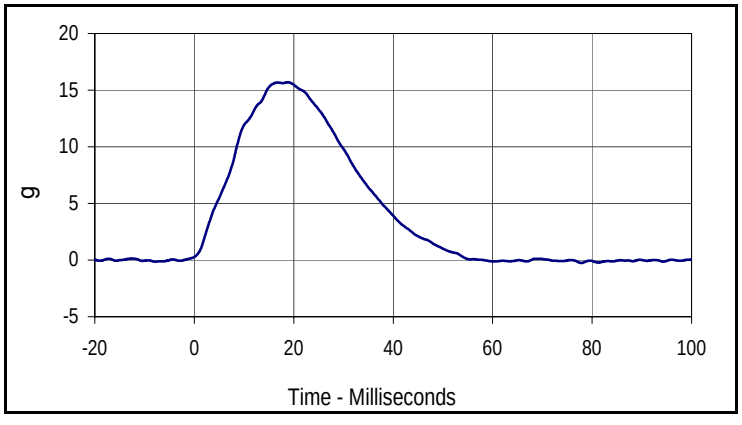
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	597	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	39.7	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	36.9	Pass
Peak Lower Spine Y Acceleration		g	9 to 14	12.3	Pass
Peak Impactor Acceleration		g	12 to 16	15.7	Pass
			Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
39.7	23.2	0.0	-6.7
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
36.9	22.1	0.0	-14.5

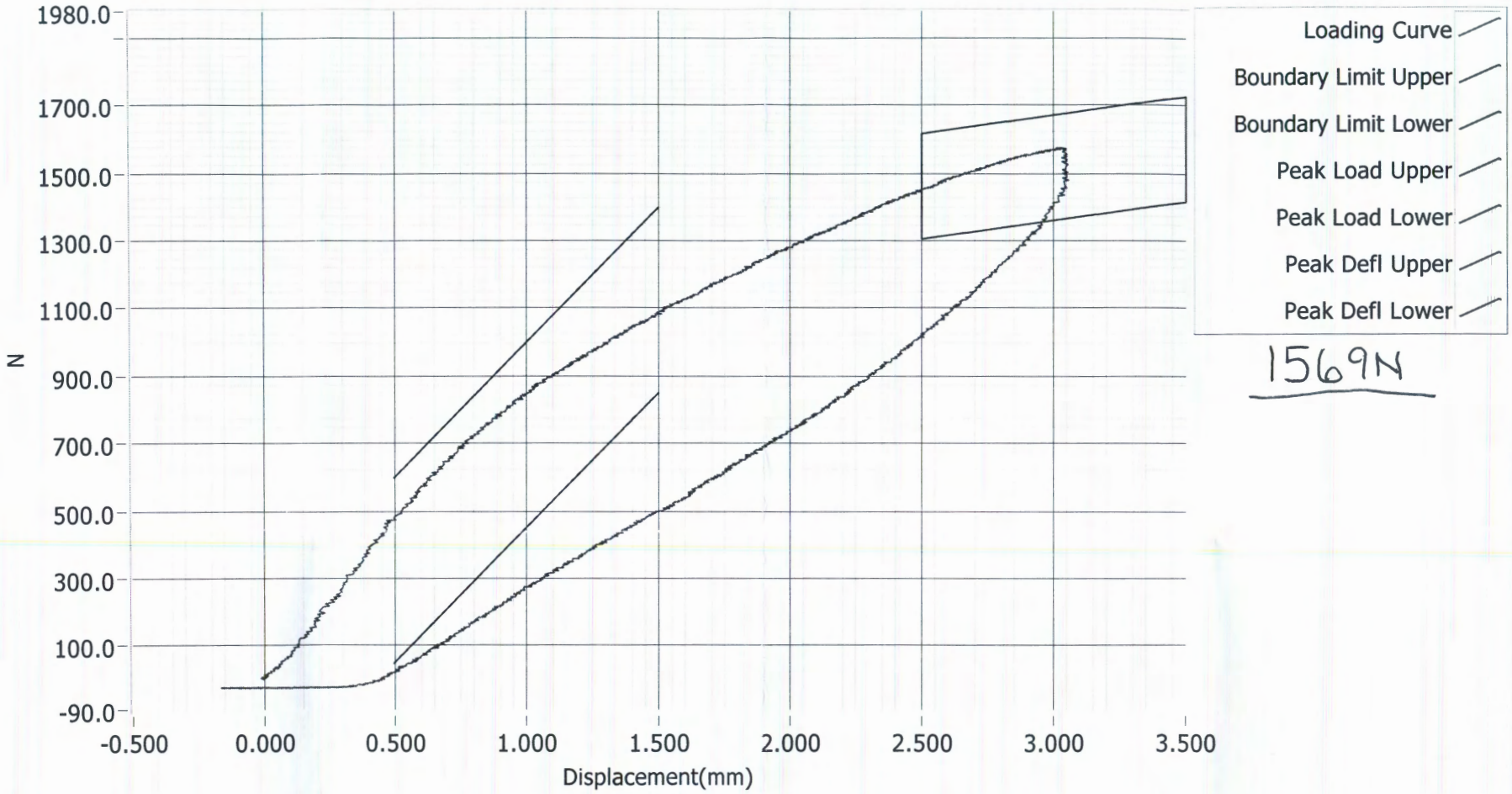


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.3	12.5	-3.2	38.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.7	18.9	-0.3	77.8

Resultant Data - SIDIIs Plug Compression



1569N

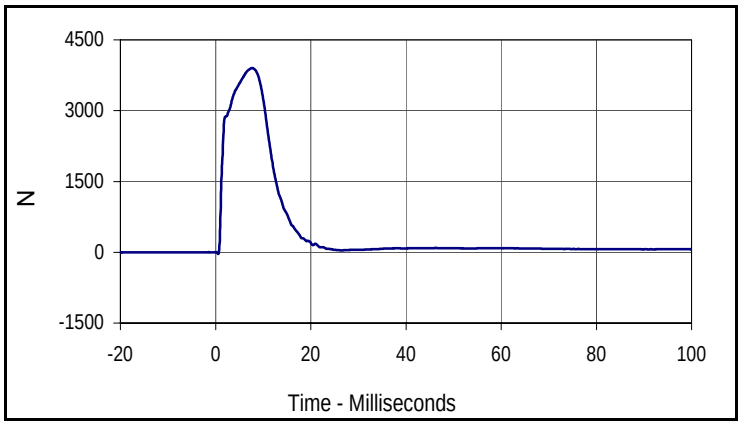
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	70987	12/13/2013	10:53 PM
Cert ID	**ATD Serial Number**	**ATD Type**	
	N/A	SIDIIs	

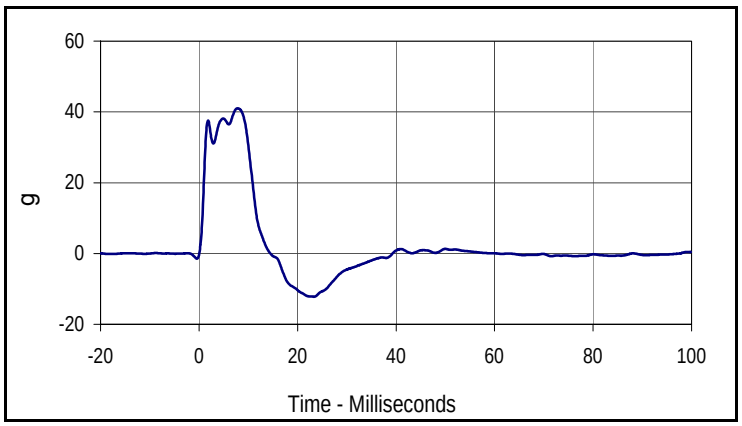
Current Date : 12/13/2013 Current Time : 22:54:35

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299ACET090

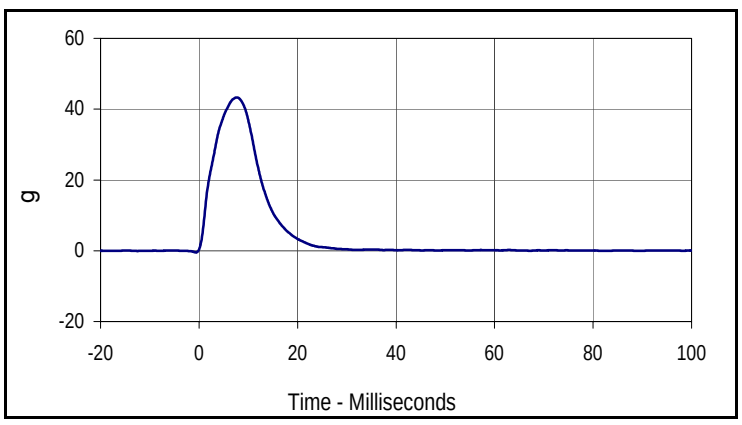
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	642	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.0	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.69	Pass
Peak Acetabulum Force Y		N	3600 to 4300	3900.9	Pass
Peak Pelvis Y Acceleration After 6 msec.		g	34 to 42	41.0	Pass
Peak Impactor Acceleration		g	38 to 47	43.3	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3900.9	7.6	-33.0	0.6



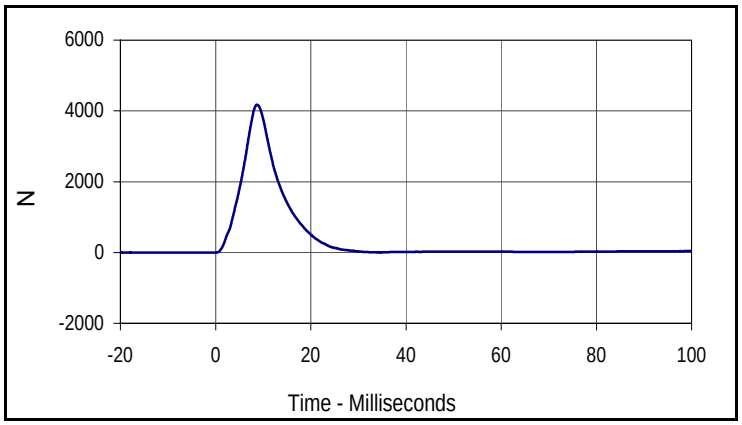
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
41.0	7.8	-12.2	23.3



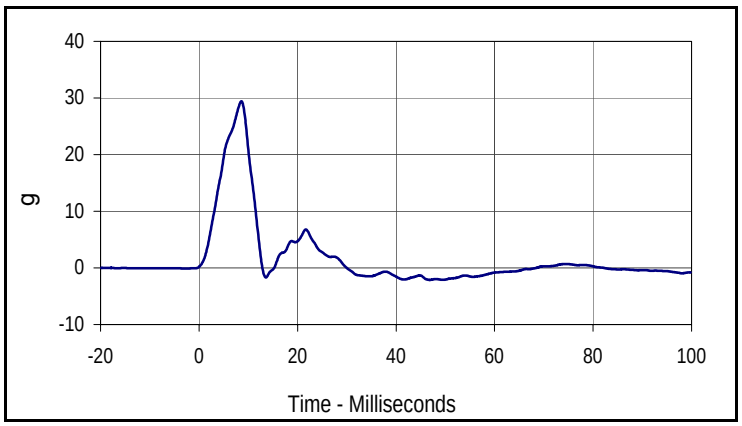
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
43.3	7.6	-0.5	-0.7

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	11/20/15
ATD Serial No.:	299	Test I.D.:	299PL090

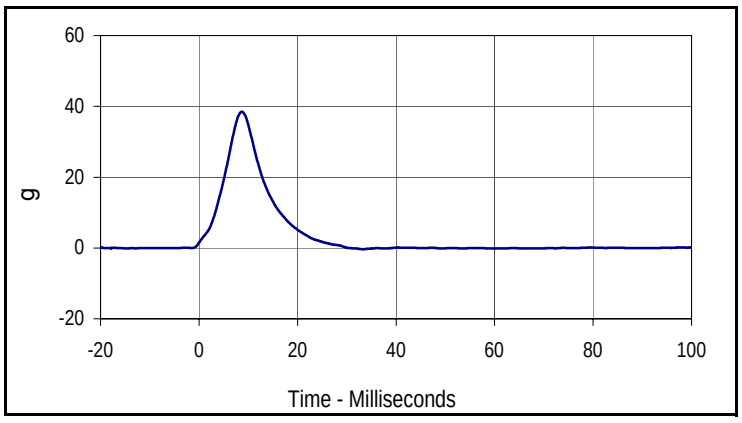
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	687	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.5	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.1	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.0	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.36	Pass
Peak Illiac Force		N	4100 to 5100	4176.7	Pass
Peak Pelvis Y Acceleration		g	28 to 39	29.4	Pass
Peak Impactor Acceleration		g	36 to 45	38.5	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4176.7	8.7	-2.7	-1.6



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
29.4	8.6	-2.1	46.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
38.5	8.7	-0.4	33.3

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

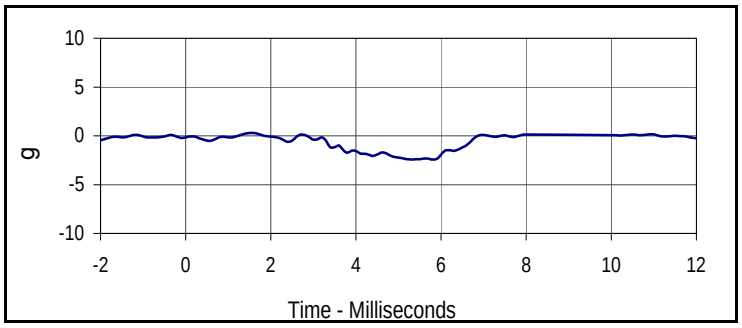
Test Program:	SID IIs External Measurements	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	N/A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	21	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
			Overall Test Results		Pass

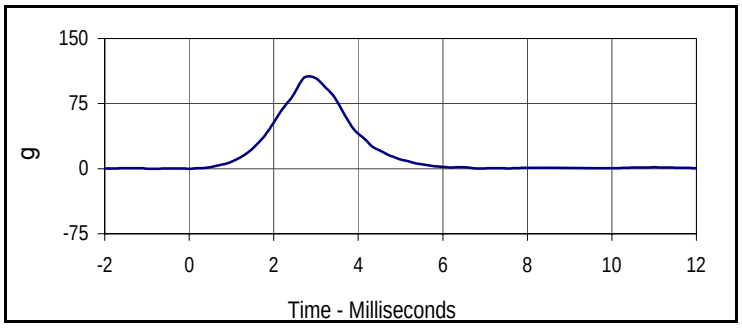
Test Program:	SID IIs Head Drop Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299HD091

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	262	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Peak Head Resultant Acceleration		g	115 to 137	129.6	Pass
Peak Head X Acceleration		g	<15	2.4	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	1.0	Pass
			Overall Test Results		Pass

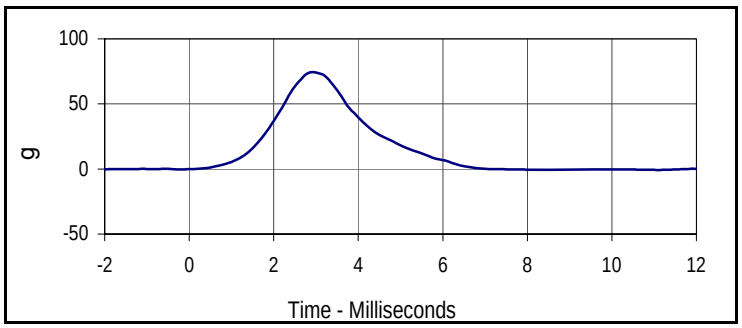
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
129.6	2.9	0.1	-1.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
0.3	1.5	-2.4	5.8



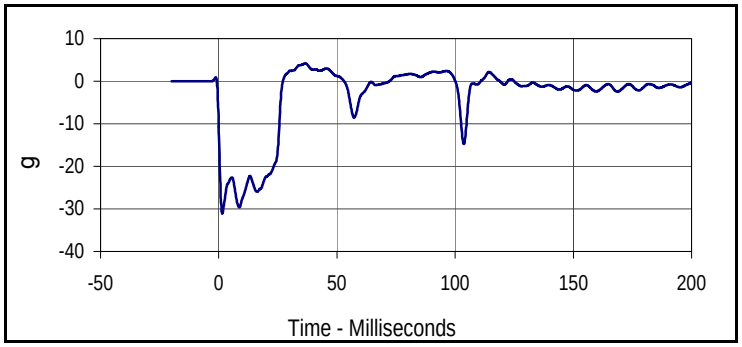
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
106.4	2.8	-0.3	-0.9



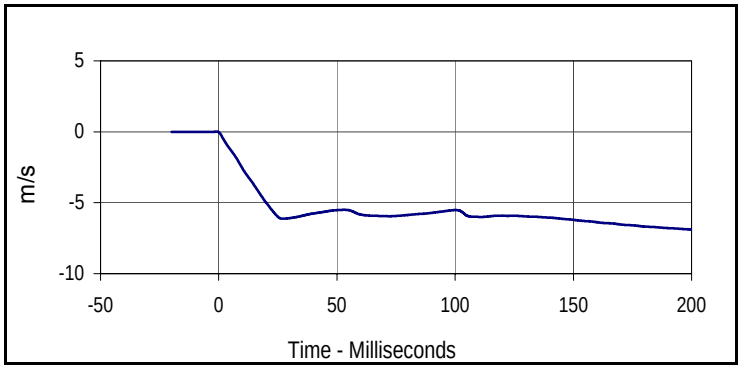
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
74.5	2.9	-0.7	11.1

Test Program:	SID IIs Neck Flexion Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299NB091

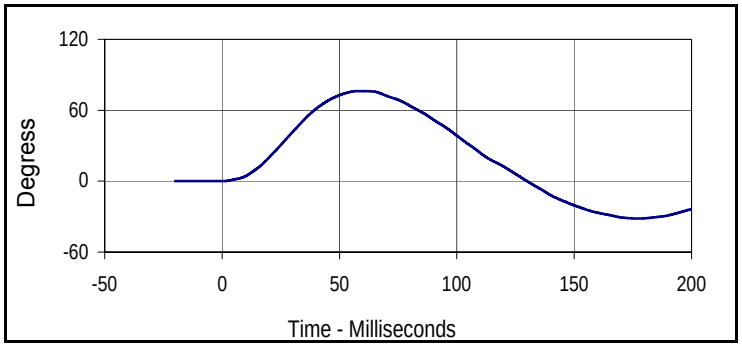
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	307	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.60	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.57	Pass
	15 msec	m/s	-3.30 to -4.10	-3.77	Pass
	20 msec	m/s	-4.40 to -5.40	-4.98	Pass
	25 msec	m/s	-5.40 to -6.10	-5.99	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.13	Pass
D-Plane Rotation	Max	Degrees	71 to 81	76.3	Pass
	Time	msec	50 to 70	58.6	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-41.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	105.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.2	0.0	-31.1	0.0

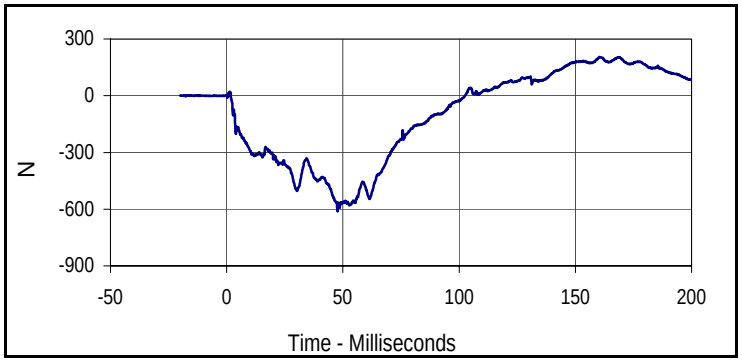


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.9	199.9

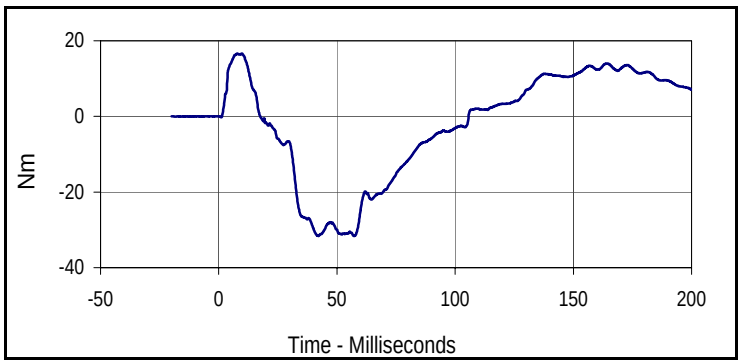


Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
76.3	58.6	-31.6	177.0

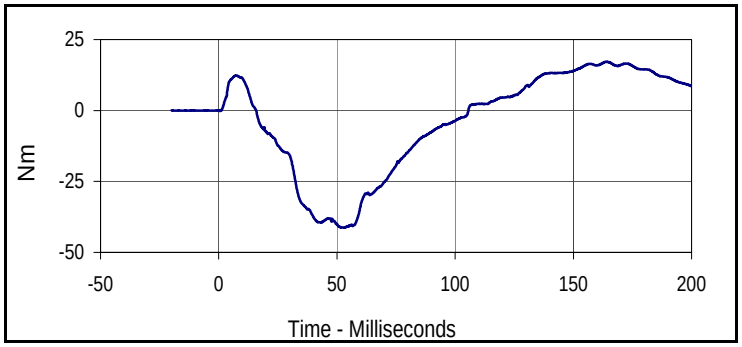
Test Program:	SID IIs Neck Flexion Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299NB091



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
204.8	160.3	-611.2	47.7



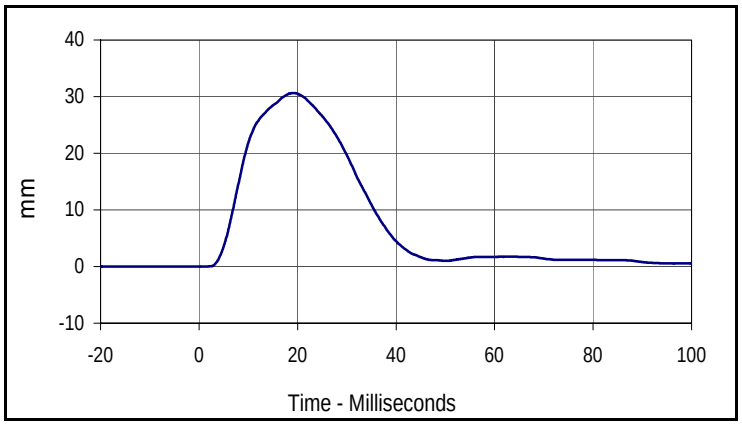
Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.6	9.8	-31.6	42.2



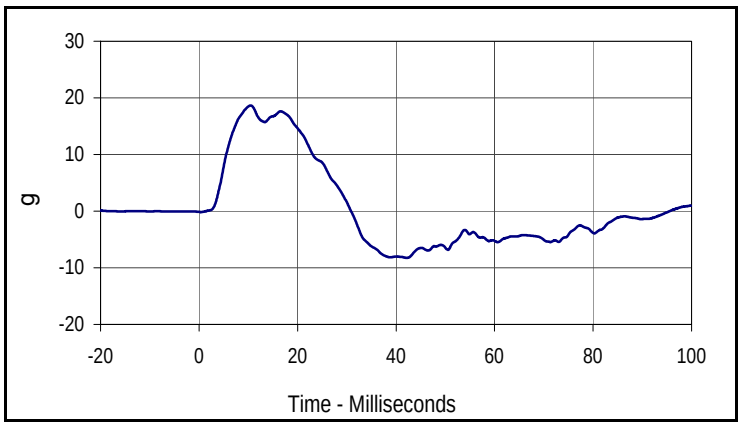
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
17.2	164.1	-41.3	53.3

Test Program:	SID IIs Shoulder Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299SH091

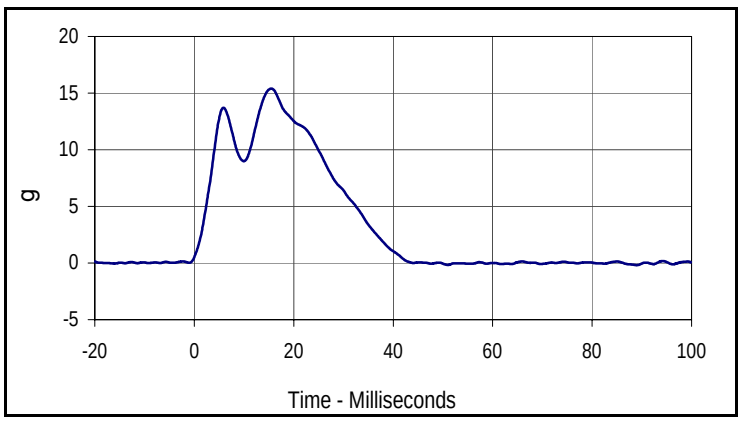
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	352	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	30.6	Pass
Peak Lateral Spine Acceleratrion Y		g	17 to 22	18.7	Pass
Peak Impactor Acceleration		g	13 to 18	15.4	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.6	19.0	0.0	-13.7



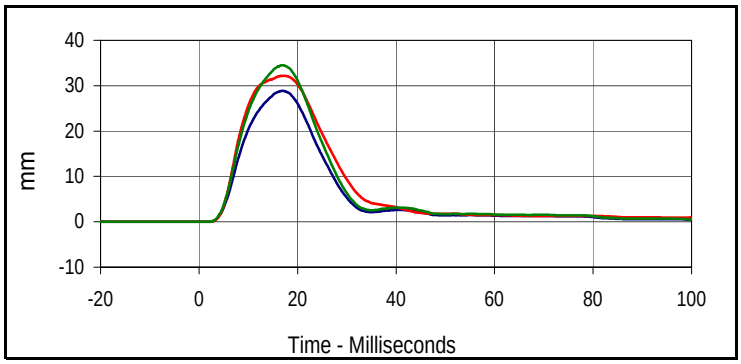
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
18.7	10.4	-8.3	42.2



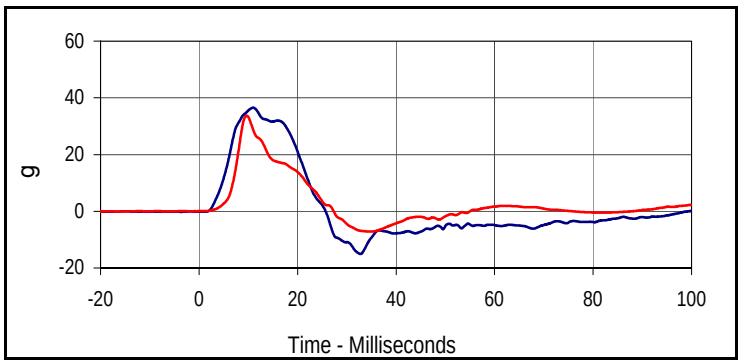
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
15.4	15.5	-0.2	89.0

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299TWA091

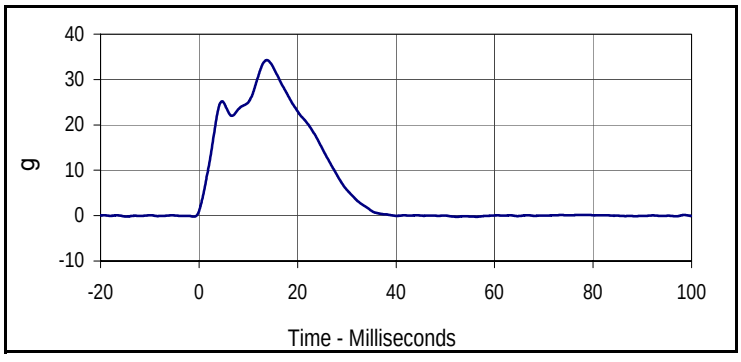
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	397	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.75	Pass
Peak Shoulder Deflection		mm	31 to 40	37.6	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	28.9	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.2	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	34.5	Pass
Peak Upper Spine Y Acceleration		g	34 to 43	36.5	Pass
Peak Lower Spine Y Acceleration		g	29 to 37	33.7	Pass
Peak Impactor Acceleration		g	30 to 36	34.3	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
28.9	17.0	0.0	-6.5
Middle Thorax Deflection			
Max	Time	Min	Time
32.2	17.2	0.0	-15.4
Lower Thorax Deflection			
Max	Time	Min	Time
34.5	17.0	0.0	-6.5

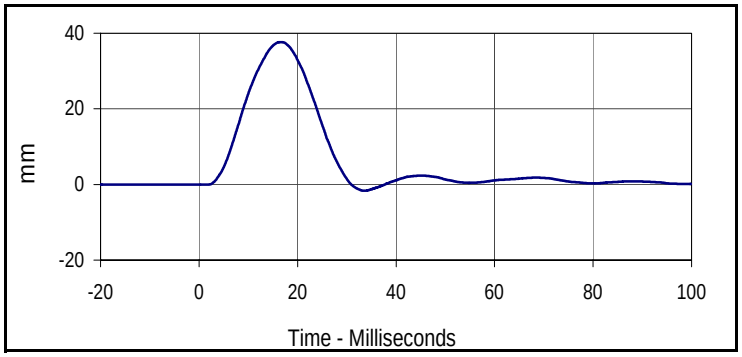


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
36.5	11.0	-15.0	32.8
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
33.7	9.7	-7.1	34.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.3	13.8	-0.3	52.3

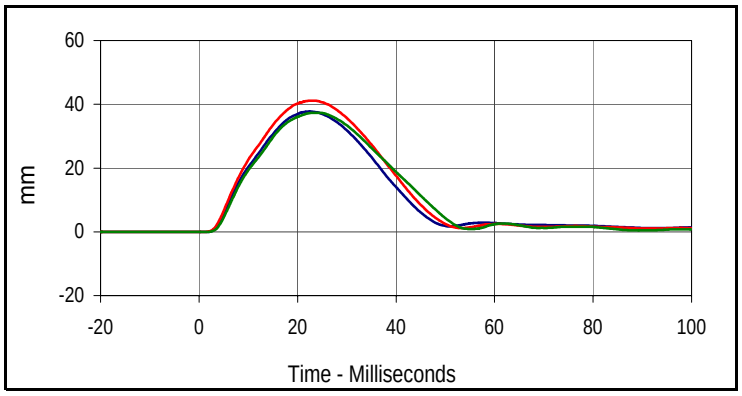
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299TWA091



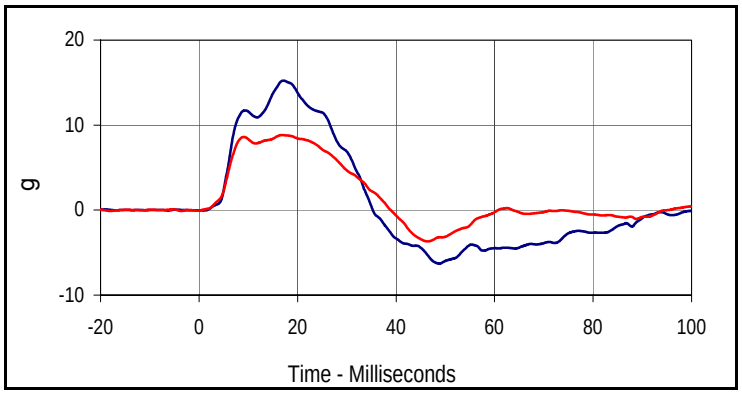
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
37.6	16.6	-1.6	33.5

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299TWOA091

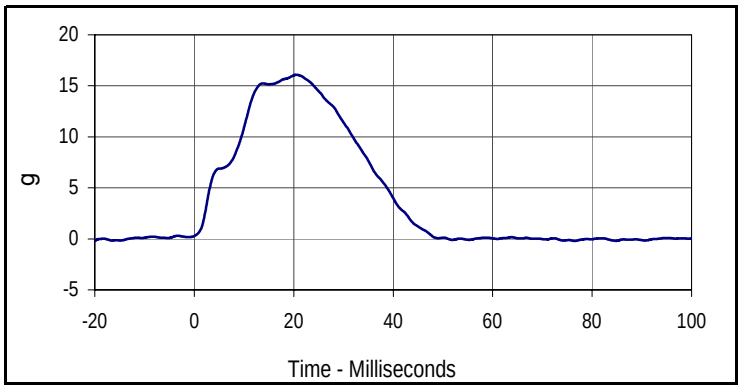
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	442	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.2	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.30	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.8	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.2	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.3	Pass
Peak Upper Spine Y Acceleration		g	13 to 17	15.2	Pass
Peak Lower Spine Y Acceleration		g	7 to 11	8.8	Pass
Peak Impactor Acceleration		g	14 to 18	16.1	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.8	22.4	0.0	-16.6
Middle Thorax Deflection			
Max	Time	Min	Time
41.2	22.9	0.0	-15.5
Lower Thorax Deflection			
Max	Time	Min	Time
37.3	24.0	0.0	-15.0



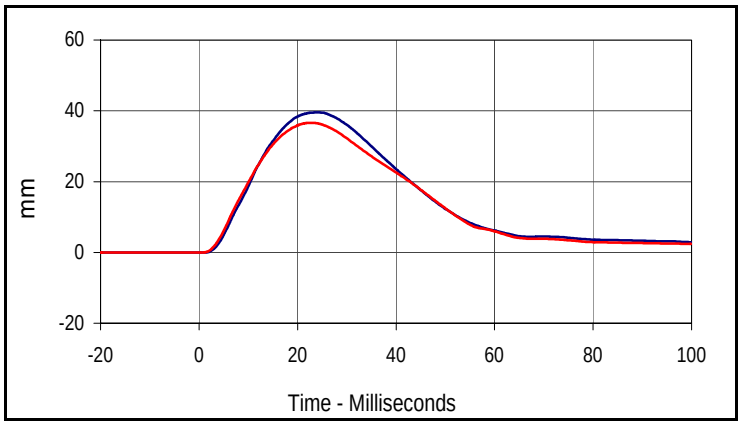
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.2	17.1	-6.3	48.7
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
8.8	16.8	-3.7	46.4



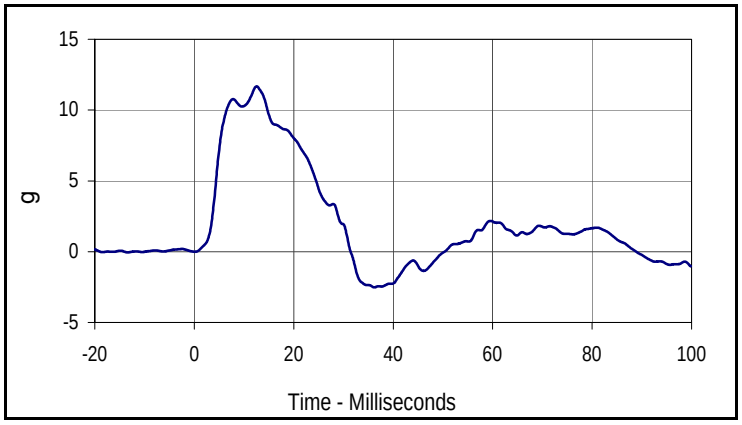
Curve Description			
Impactor Accleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.1	20.5	-0.2	76.5

Test Program:	SID IIs Abdomen Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299ABD091

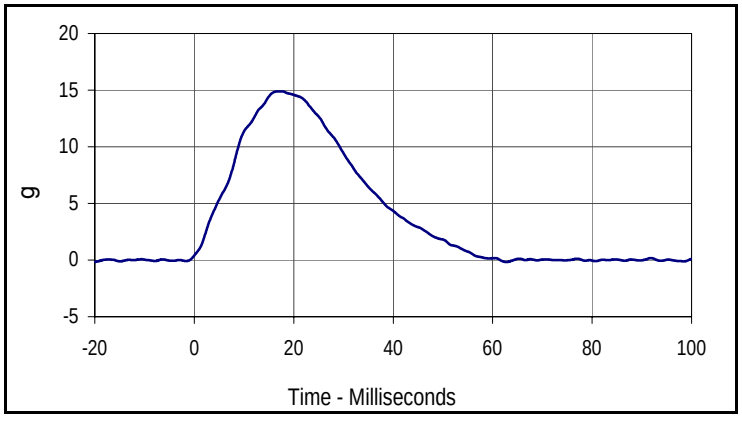
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	487	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	39.5	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	36.6	Pass
Peak Lower Spine Y Acceleration		g	9 to 14	11.7	Pass
Peak Impactor Acceleration		g	12 to 16	14.9	Pass
			Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
39.5	23.6	0.0	-0.1
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
36.6	22.9	0.0	-0.5

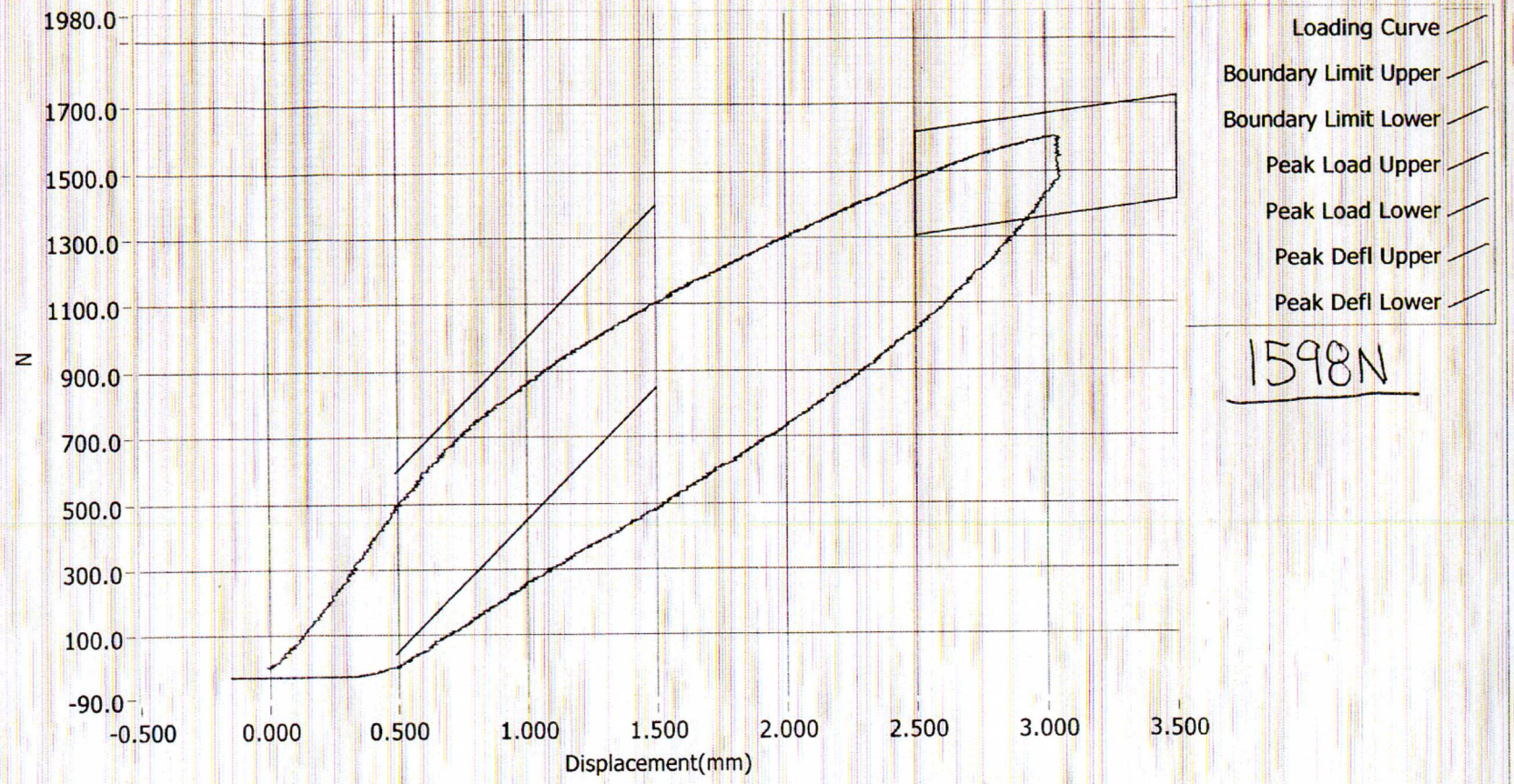


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
11.7	12.5	-2.5	36.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
14.9	17.4	-0.2	62.8

Resultant Data - SIDIIs Plug Compression



1598N

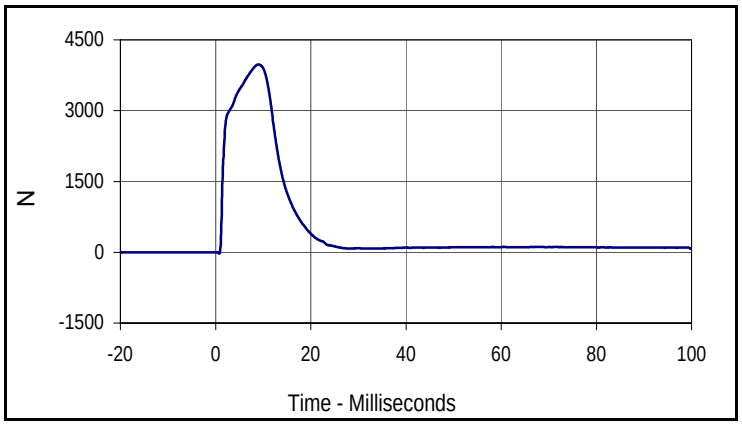
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	71007	12/13/2013	11:22 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

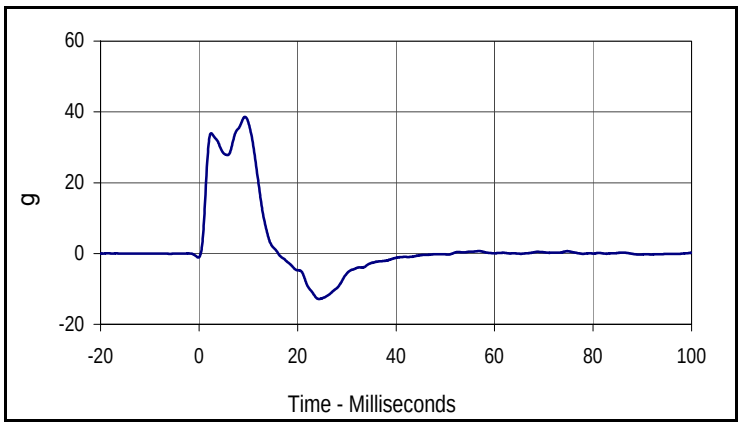
Current Date : 12/13/2013 Current Time : 23:22:59

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299ACET091

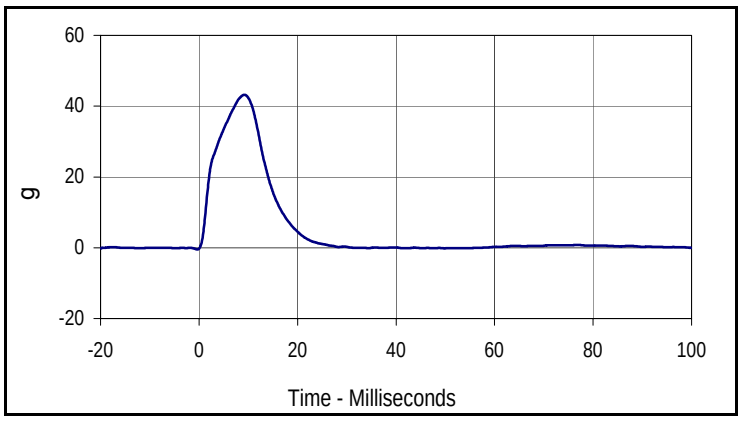
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	532	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.2	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.71	Pass
Peak Acetabulum Force Y		N	3600 to 4300	3977.9	Pass
Peak Pelvis Y Acceleration After 6 msec.		g	34 to 42	38.6	Pass
Peak Impactor Acceleration		g	38 to 47	43.2	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3977.9	9.0	-26.6	0.8



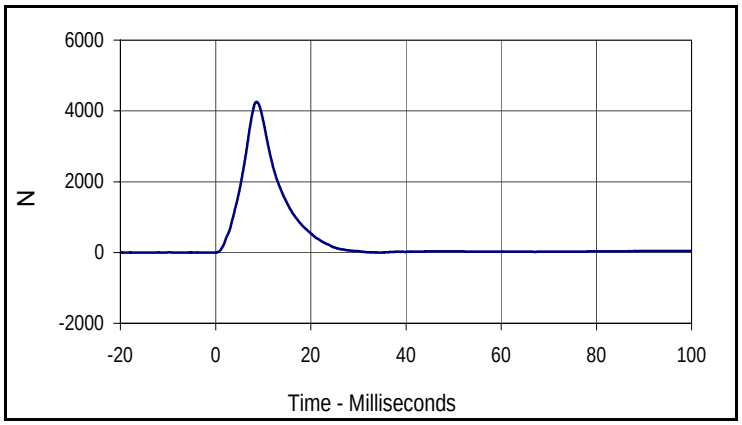
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
38.6	9.3	-12.9	24.4



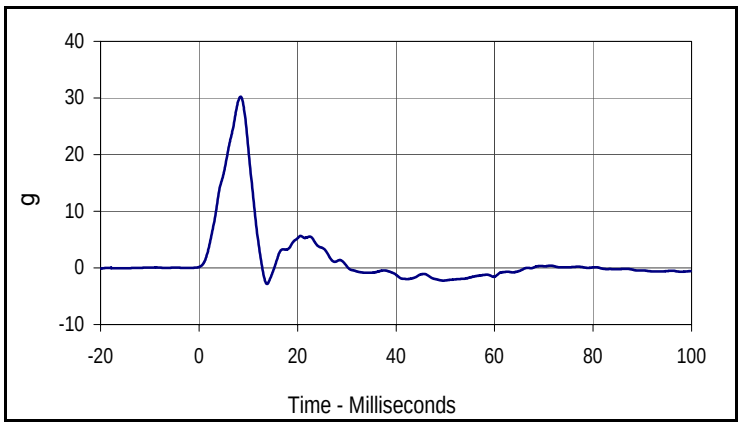
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
43.2	9.2	-0.5	-0.3

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	12/15/15
ATD Serial No.:	299	Test I.D.:	299PL091

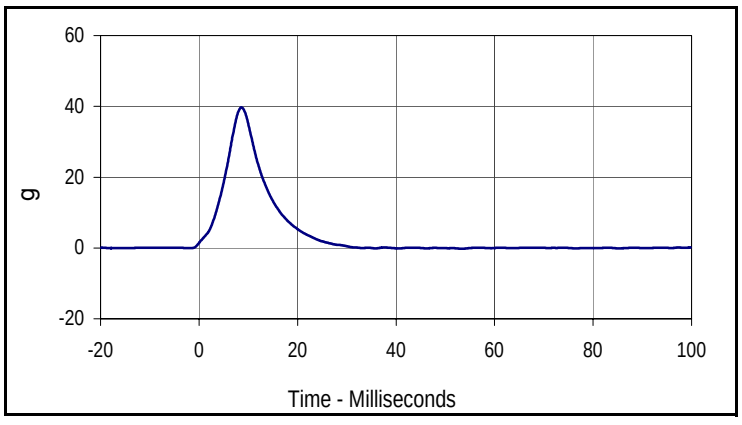
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	577	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.3	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.2	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.34	Pass
Peak Illiac Force		N	4100 to 5100	4254.9	Pass
Peak Pelvis Y Acceleration		g	28 to 39	30.2	Pass
Peak Impactor Acceleration		g	36 to 45	39.7	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4254.9	8.6	-2.6	-13.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
30.2	8.4	-2.8	13.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
39.7	8.6	-0.2	53.3

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 299		
				Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary		X	P51929	Endevco	9/23/15
			Y	P50086	Endevco	9/23/15
			Z	P51931	Endevco	9/23/15
	Redundant		X	P68604	Endevco	9/23/15
			Y	P51934	Endevco	9/23/15
			Z	P58736	Endevco	9/23/15
Displacement Potentiometers	Thoracic Rib	Upper	Y	1143	FTSS	11/12/15
		Middle	Y	1160	FTSS	11/12/15
		Lower	Y	1213	FTSS	11/12/15
	Abdominal Rib	Upper	Y	1218	FTSS	11/12/15
		Lower	Y	1177	FTSS	12/17/15
Lower Spine Accelerometers (T12)			X	04I20-Z04	Endevco	11/12/15
			Y	06A07-R08	Endevco	11/12/15
			Z	P58795	Endevco	11/12/15
Acetabulum Load Cell			Y	272	Denton	5/1/15
Iliac Wing Load Cell			Y	284	Denton	6/23/15
Pelvis Plug (Struck Side)				70771	FTSS	12/13/13
Pelvis Plug (Non-Struck Side)				70736	FTSS	12/12/13

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A160341	MSI	12/13/15
Vehicle Center of Gravity	Y	A145964	MSI	12/13/15
Vehicle Center of Gravity	Z	A148322	MSI	12/13/15
Left Floor Sill	Y	A145980	MSI	12/13/15
A-Pillar Sill	Y	A104832	MSI	12/13/15
A-Pillar Low	Y	A104810	MSI	12/13/15
A-Pillar Mid	Y	A159398	MSI	7/8/15
B-Pillar Sill	Y	A145989	MSI	7/7/15
B-Pillar Low	Y	A160692	MSI	12/13/15
B-Pillar Mid	Y	A160725	MSI	12/13/15
Driver Seat	Y	A160688	MSI	12/13/15
Engine Top	X	A148316	MSI	12/13/15
Engine Top	Y	A152835	MSI	12/13/15
Firewall	Y	A152855	MSI	7/8/15
Right Roof	Y	A160357	MSI	7/7/15
Right Floor Sill	Y	A159437	MSI	12/13/15
Rear Floorpan	X	A148211	MSI	7/7/15
Rear Floorpan	Y	A148236	MSI	12/13/15

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	3/30/15
Load Cell 2	132304A	Interface	3/30/15
Load Cell 3	19477	Interface	3/30/15
Load Cell 4	19325	Interface	3/30/15
Load Cell 5	131827A	Interface	3/30/15
Load Cell 6	132302A	Interface	3/30/15
Load Cell 7	19267	Interface	3/30/15
Load Cell 8	19321	Interface	3/30/15